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MAR 20 2008

DEPARTMENT OF
WATER RESOURCES

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Attorneys for East Hills Development LLC and Lexington Hills, Inc.

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT
OF THE STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re: SRBA

Case No. 39576

Subcase Nos. 63-00123D, 63-00123F, and
63-00123G

**REBUTTAL TESTIMONY OF
DAVID H. ROYLANCE**

REBUTTAL TO OPINION THAT FULL RIGHT IS DIVERTED TO SUBDIVISION

Q. Have you read the Expert Report of David B. Shaw dated March 2008 that was filed in this case?

A. Yes.

Q. Do you recall the opinion expressed in Mr. Shaw's report that the Lexington Hills Homeowners' irrigation system beneficially uses all the water delivered to it by the Farmer's Union Ditch Company without waste?

A. Yes.

Q. Do you agree with this opinion?

A. No. Mr. Shaw is incorrect to conclude that the quantity of water flowing into the Subdivision is the full quantity of water allocated to the Subdivision on the books of Farmers Union Ditch Company. The flow of water from the Farmers Union Canal into the Subdivision is

not measured or regulated. Water is diverted from the Farmers Union Ditch Company canal into a pond near the southwest corner of the Subdivision. The pumps for the pressurized irrigation system for the Subdivision are located in this pond. The water surface elevation of the pond is at the same elevation as the Farmers Union Canal, so the quantity of water that flows into the pond matches the quantity of water used by the irrigation system. Water that is not needed by the Subdivision flows down the Canal.

REBUTTAL TO OPINION THAT IDWR WILL NOT ALLOW TRANSFER

Q. Do you recall the portion of Dave Shaw's report where he discusses the permit application for permit 63-11413 and suggests that in those proceedings Lexington Hills committed to leave the entirety of the surface water rights for the Subdivision with the Subdivision?

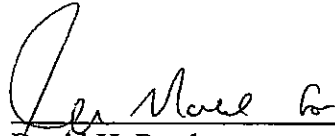
A. Yes.

Q. Do you agree with his analysis?

A. No. At the time of we applied for the permit application, which was for a ground water right to supply potable and irrigation water to the residential subdivision, we did not have a preliminary plat or any entitlements to develop the ground. We only had general plans. We applied for the water permit early on because there would be no point in proceeding with development if we could not get a water right for the development. In the course of the administrative proceedings for the permit, a primary concern of the protestants to the permit was the potential for reduction in the water level in their wells due to pumping of the new wells for the Subdivision. Accordingly, we committed to utilizing the available surface water for irrigation rather than using ground water. My commitments along this line never were intended to mean that we would leave water with the Subdivision that was not needed. Indeed, that would be wasteful. As we moved forward with development, we were required to prepare a feasibility

report to determine which lots in the Subdivision we could deliver surface water to economically. My report to IDWR, dated April 7, 1993 is attached. It includes the irrigation system design report prepared by E. Lee Bean previously provided and discussed that indicates only one-half of the appurtenant surface water rights are needed for the development. As discussed in my Affidavit filed in the summary judgment proceedings, we then took actions to retain the surface water with provision to provide the homeowners what they need.

DATED this 18th day of March, 2008.



David H. Roylance

CERTIFICATE OF SERVICE

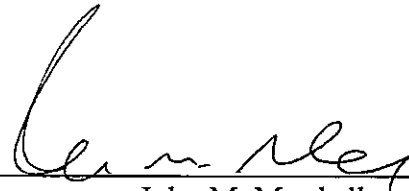
I certify that a true and correct copy of the foregoing document was mailed on March 9th, 2008, with sufficient first-class postage to the following:

Lexington Hills Homeowners Association
2354 N. Stonecrest Place
Eagle, ID 83616
Phone: 208-364-8624

Lexington Hills Homeowners
John K. Simpson
1010 W. Jefferson Street, Ste. 102
PO Box 2139
Boise, Idaho 83701-2139
Phone: 208-336-0700

Director of IDWR
PO Box 83720
Boise, Idaho 83720-0098

By: _____



John M. Marshall

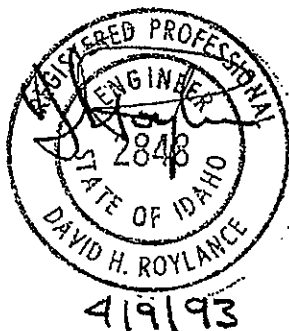
APRIL 7, 1993

FEASIBILITY REPORT

LEXINGTON HILLS IRRIGATION SYSTEM
EAGLE, IDAHO

DEVELOPER

LEXINGTON HILLS INC.
1815 STONYBROOK
EAGLE, ID 83616
(208) 939-6000



ENGINEER

ROYLANCE AND ASSOCIATES, PA
4619 EMERALD SUITE D-2 BOISE IDAHO 83706
AC 208 336-7390 FAX AC 208 336-7391

Roylance & Associates P.A.

Engineers • Surveyors • Landplanners

4619 Emerald, Suite D-2, Boise, Idaho 83706

Telephone (208) 336-7390 Fax (208) 336-7391

March 31, 1993

Idaho Department of Water Resources
ATTN: GLEN SAXTON P.E. AND DAVE TUTHILL P.E.
1237 Airport Way
Boise, Idaho 83705

RE: WATER PERMIT NO. 63-11413/LEXINGTON HILLS/
PRESSURE IRRIGATION FEASIBILITY REPORT

Dear Mr. Saxton and Mr. Tuthill:

A condition of Water Permit No. 63-11413 requires the permit holder to prepare a feasibility report to determine the economic feasibility of providing surface irrigation water to lots smaller than 1/2 acre in size at Lexington Hills and Echo Creek. This condition was a result of discussions between the developers and the Idaho Department of Water Resources regarding the viability of providing surface water to small lots. The developers were encouraged to utilize the surface water rights for irrigation, which would minimize the impact to the aquifer. The surface water is available typically April 15 to September 15 every year in a good water year.

After the water permit was granted the irrigation system for Lexington Hills was designed. During design it became apparent for various reasons that the irrigation water storage ponds should be located at the south end of the project. The 1/2 acre and the 1 acre lots to be irrigated, however, were located at the north end of the project. The transport line connecting the pressure station at the south end of the project to the large lots to the north, had to pass through the 1/4 acre and the 1/3 acre lots. Furthermore, the transport line had to be looped to equalize pressure and minimize friction head losses in the distribution system. Given this situation, the additional cost to provide irrigation water to the smaller lots was the cost to upsize the transport lines and the cost to provide the individual water services to all of the lots. As a result the developers have decided to provide surface irrigation water to all of the lots in Lexington Hills.

The irrigation system consists of the following:

There are three storage ponds located on the south end of the project. These ponds are gravity filled with surface water from the Farmers Union Canal, which cuts across the southwest corner of the project. Obviously the ponds can be filled with surface water only when available, which typically is mid-April to mid-October in a good water year. The developers intend to supplement this surface water for approximately 30 days in the spring and 30 days in the fall (to the extent allowed under the water permit) by filling the ponds from the domestic water system. There are two pumps installed in the irrigation ponds to pressurize the irrigation water distribution system. The 10 horsepower pump meets system demands under low flow conditions. When demand increases, pressure drops and a pressure switch activates the 50 horsepower pump to meet high flow demands.

There are two separate and distinct water distribution systems on the project. One is the domestic water distribution system, which uses as its source, the water wells listed in the water permit. The other is the irrigation water distribution system. The Division of Environmental Quality will not allow any interconnection between the two distribution systems because of obvious health concerns. If Lexington Hills needs to supplement

Page 2
Idaho Department of Water Resources

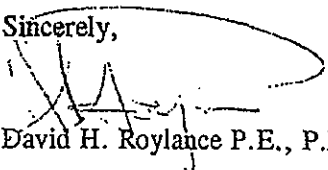
surface irrigation water in the spring and the fall, it is done by filling the irrigation ponds from the domestic water system and then delivering the water with the pressure pumps and distribution lines of the irrigation system.

Enclosed is some information developed by Mr. Lee Bean when we were designing the Lexington Hills irrigation system.

Mr. Joe Canning, P.E. is the project engineer for the Echo Creek Development. He is providing a separate feasibility report for that project. It is my understanding, in discussions with Mr. Canning, that Echo Creek intends to develop and construct its own separate pressurized irrigation system for the remainder of their project.

If you need any additional information, please contact me.

Sincerely,



David H. Roylance P.E., P.L.S.

DHR/nd

Enclosures

QA/LETTER/LEX.LTR

NOVEMBER 17, 1991
PROJECT NUMBER 9003-997

PRESSURIZED IRRIGATION SYSTEM DEMANDS AND SCHEDULING
LEXINGTON HILLS
EAGLE, IDAHO

DEVELOPER

LEXINGTON HILLS INC.
1815 STONYBROOK
EAGLE, ID 83616
(208) 939-6000

ENGINEER

ROYLANCE AND ASSOCIATES, PA
4619 EMERALD SUITE D-2 BOISE IDAHO 83706
AC 208 336-7390 FAX AC 208 336-7391

LANDSCAPE IRRIGATION DEMANDS
AND SCHEDULING FOR LEXINGTON HILLS
DEVELOPMENT AT EAGLE, IDAHO

PREPARED BY:

E. LEE BEAN
IRRIGATION BY DESIGN

WATER SUPPLY

The project area of 272 acres has existing water rights from the Farmers Union Canal in the amount of 209.4 minors inches. This flow is being used to irrigate farm crops. An existing 50 HP, short-coupled turbine pump located in the canal at the NW corner of the property lifts water into a holding pond, also located at the NW property corner. Existing farm crops are irrigated by flood and sprinkler methods. A second pump station is used to operate the sprinkler system. Except for drought years, irrigation water is available from April 15th to October 15th.

PROPOSED USE OF CANAL WATER FOR PROJECT

A pump station located at a holding pond near the south boundary of the property will provide the flow necessary to irrigate the following areas: "A" lots, "B" lots, "C" lots, "D" lots, school grounds and park (open space areas). Turf irrigation demands are calculated from evapotranspiration data and shown following.

HISTORICAL ET FOR LAWNS--BOISE VALLEY

(Source: Rainfall--Evapotranspiration Data
published by The Toro Company--1966)

Month	Average Daily ET	ET @ 70% Irr. Eff.	Gal/Ac/Day
April	.075 inches	0.107 inches	2905
May	.124 "	0.177 "	4806
June	.169 "	0.241 "	6544
July	.224 "	0.320 "	8689
Aug	.190 "	0.271 "	7358
Sept	.118 "	0.169 "	4589
Oct	.060 "	.086 "	2335

The estimated acreage to irrigate for each area is as follows:

"A" lots @ 0.75 acres each x 34	= 25.5
"B" lots @ 0.5 " " x 112	= 56.0
"C" lots @ 0.2 " " x 157	= 31.4
"D" lots @ 0.1 " " x 101	= 10.1
School - 8.0 " "	= 8.0
Parks - 30.0 " "	= 30.0
	<u>161</u>

Assuming all areas will eventually have automatically controlled sprinkling systems, the pumping station and mainlines should be sized for only nighttime irrigation. Therefore, demands are calculated as follows:

A lots average 0.75 acres to irrigate 34 lots, divide into odd and even with irrigation limited to 12 MN to 8 AM every other day.

Flow allowed = 30 GPM

Peak demand = .75 x 8689 x 2 = 13,033.5 gal/irr

Time = 13,033.5 ÷ 30 = 434.45 min

= 7¼ hrs/irrigation

Total flow = $17 \times 30 = 510$ GPM

Total demand = $510 \times 7.25 \times 60 = 130,050$ gal/day

B lots average .5 acres to irrigate 112 lots, divide into odd and even with irrigation limited to 12 MN to 8 AM every other day.

Flow allowed = 20 GPM

Peak demand = $.5 \times 8689 \times 2 = 8689$ gal/irr

Time = $8689 \div 20 = 434.45$ min

= $7\frac{1}{4}$ hrs/irrigation

Total flow = $56 \times 20 = 1120$ GPM

Total demand = $1120 \times 7.25 \times 60 = 487,200$ gal/day

C lots average .2 acres to irrigate 157 units, divide into four groups with irrigation 12 MN to 4 AM odd nights, 4 AM to 8 AM odd nights, 12 MN to 4 AM even nights and 4 AM to 8 AM even nights.

Flow allowed = 15 GPM

Peak demand = $0.2 \times 8689 \times 2 = 3,475.6$ gal/irr

Time = $3,475.6 \div 15 = 231.7$ min

= about 4 hrs.

Total flow = $40 \times 15 = 600$ GPM

Total demand = $600 \times 4 \times 60 = 144,000$ gal/day

D lots average 0.1 acre to irrigate 101 units, divide into four groups, with irrigation 12 MN to 4 AM odd nights, 4 AM to 8 AM odd nights, 12 MN to 4 AM even nights and 4 AM to 8 AM even nights.

Flow allowed = 10 GPM

Peak demand = $.1 \times 8689 \times 2 = 1,737.8$ gal/irr

Time = $1,737.8 \div 10 = 173.78$ min

= about 3 hrs/irrigation

Total flow = $25 \times 10 = 250$ GPM

Total demand = $250 \times 4 \times 60 = 60,000$ gal/day

School - 10 acres -- estimate 8 ac. to irrigate. Irrigate

1/2 daily from 10 PM to 8 AM.

Peak demand = 4 ac x 8689 = 34,756 gal/day

10 hr x 60 = 600 min/day

Flow req'd = 34,756 ÷ 600 = 60 GPM

Total flow = 60 GPM

Total demand = 60 x 600 = 36,000 gal/day

Parks/open space - estimate 30 acres to irrigate. Irrigate

1/2 daily from 10 PM to 8 AM.

Peak demand = 15 x 8689 = 130,335 gal/day

10 hr x 60 = 600 min/day

Flow req'd = 130,335 ÷ 600 = 220 GPM

Total flow = 220 GPM

Total demand = 220 x 600 = 132,000 gal/day

Flows required

A lots 510 GPM 12 MN to 8 AM

B lots 1120 " " "

C lots 600 " " "

D lots 250 " " "

2480 GPM

School 60 GPM 10 PM to 8 AM

Park/open
space 220 " " "

280 GPM

Flows and HP Requirements

Total flow -- lots 2480 GPM

school 60 "

parks 220 "
2760 GPM

(Does not allow for cluster homes or expansion.)

$$\text{Total HP} = \frac{2760 \times 75 \times 2.31}{3960 \times .75} = 161 @ 75\% \text{ eff.}$$

$$\text{Flow } 10-12 = 280 \text{ GPM} \times 2 \times 60 = 33,600$$

$$12-8 = 2760 \times 8 \times 60 = 1,324,800$$

$$\underline{\underline{1,358,400 \text{ G/D}}}$$

Storage -- 1,358,400 G/D = 181,604 cu ft/D demand

Pond:

@ 10 ft. depth & 1.5 ac area = 653,400 cu ft = 3½ day supply
w/o losses

@ 5 ft. depth & 1.5 ac area = 326,700 cu ft = 1.8 day supply
w/o losses

$$\begin{aligned} \text{Water right} &= 206 \text{ minors inches flow} = 206 \times 9 = 1854 \text{ gallons/min} \\ &= 1854 \times 24 \times 60 = \underline{\underline{2,669,760 \text{ G/D}}} \end{aligned}$$

Need 50% of water right to irrigate the above proposed areas.

Pump -- 2800 GPM @ 75 PSI station

$$\text{HP} = \frac{2800 \times 180}{3960 \times .75} = 169.7$$

3 60 HP pumps -- one VFD

Pipe Svstem

The pump station, mainline, loops to cul-de-sacs and service connections have been designed to supply the flows based on set irrigation schedules. Outlets to lots are located at points shown on plan.

Outlets for "A" lots to be $1\frac{1}{2}$ "

"B" " " " $1\frac{1}{2}$ "

"C" " " " 1"

"D" " " " $3/4$ "

and 2" or more for school and parks.

One outlet to be used for adjoining lots since irrigation will be on alternate days. Install one $3/4$ " hose bibb about 6" above ground for each lot on designated size riser. One drain valve and two gate valves to be installed for each outlet.

(Some type of warning should be placed on hose bibb outlet-- "nonpotable water" etc.)

Estimate (prepared 9/19/91)

150'	15"	PVC	Pipe	Gasket	CI 160	9.89	1,483.50
3,450'	12"	"	"	"	"	6.88	23,736.00
3,540'	10"	"	"	"	"	4.89	17,310.60
3,975'	8"	"	"	"	"	3.50	13,912.50
4,680'	6"	"	"	"	"	1.86	8,704.80
530'	4"	"	"	"	"	.99	524.70
19,725'	3"	"	"	SW	CI 16	.57	11,243.25
15,600'	2"	"	"	"	"	.2646	4,127.76
							\$81,043.11

228 service outlets

outlets to be 1½" for A lots -
 1½" " B " -
 1 " " C " - @ \$50 ea = 11,400.00
 3/4" " D " -

and 2 " or more for parks/open areas

Pump station 70,000.00

\$162,443.11

Fittings, valves, drains (etc.) 17,556.89

ESTIMATED MATERIALS TOTAL \$180,000.00

Irrigation Water Costs (Boise water rates)

at Lexington Hills for:

A lots, B lots, C lots, D lots, school and open areas.

34 "A" lots @ \$792.09	= \$ 26,931.06
112 "B" lots @ 528.06	= 59,142.72
157 "C" lots @ 249.95	= 39,242.15
101 "D" lots @ 154.22	= 15,576.22
School	= 9,733.87
Open area	= 23,718.40
Total Season	<u>\$179,344.42</u>

STATEMENT TO HOMEOWNERS

Nonpotable irrigation water is available for your landscaping from April 15 to October 15.

Your sprinkler irrigation system should be designed to use a maximum flow of: A 30 GPM

B 20 GPM

C 15 GPM

D 10 GPM

Irrigation water is available for your lot between:

- ☐ 1/E 12 MN and 8 AM on even nights for A size lots
- ☐ 1/O 12 MN and 8 AM on odd nights for A size lots
- ☐ 1/E 12 MN and 8 AM on even nights for B size lots
- ☐ 1/O 12 MN and 8 AM on odd nights for B size lots
- ☐ 1/E 12 MN and 4 AM on even nights for C size lots
- ☐ 2/E 4 AM and 8 AM on even nights for C size lots
- ☐ 1/O 12 MN and 4 AM on odd nights for C size lots
- ☐ 2/O 4 AM and 8 AM on odd nights for C size lots
- ☐ 1/E 12 MN and 4 AM on even nights for D size lots
- ☐ 1/O 4 AM and 8 AM on even nights for D size lots
- ☐ 2/E 12 MN and 4 AM on odd nights for D size lots
- ☐ 2/O 4 AM and 8 AM on odd nights for D size lots

If you do not have an automatically timed sprinkling system you may irrigate from 8 AM to 10 PM on the above scheduled days.

GENERAL INFORMATION

Lawn areas in Boise Valley require irrigation volumes based on rate-of-growth. Rate-of-growth is influenced by daylight hours, mean temperature, fertility of soil, plant types, etc.

Your sprinkling irrigation system must be designed to apply adequate water to sustain plant growth during peak demand (July) within your assigned irrigation schedule.

Irrigation is basically a means of replacing root-zone moisture used by the plant each time you irrigate. For example, if you irrigate every-other day, you must apply enough water to last two days, which is about 30% of what is needed for a one-week supply. Irrigation then is simply a method of replacing root-zone moisture because there has been no rainfall.

Irrigation requirements change during the season. The following information can be used as a guide.

Average daily demand for July in the Boise Valley is about 1/4 inch each day --- 1/2 inch every-other day schedule --- 3/4 inch for a three day schedule, etc. Each month will require irrigation in approximately these amounts:

April 33%, May 55%, June 75%, July 100%, August 85%, September 53% and October 27%.

Scheduling (or setting run times) for your system must not only be based on daily requirements, but on rate-of-application of the sprinklers on each zone. Also, there are variations due to shade and sun areas.

For example in July you need about a 1/2 inch of water every other day. If a sprinkler zone applies water at a rate of 1/2 inch per hour, you need to let the zone run one hour. Sprinklers being used can vary from about 0.2 inches per hour to 1.5 inches per hour application rate. If you need 1/2 inch and have a rate of 1.5 inches, run time would be 20 minutes.

The designer of your sprinkling system should provide you with the necessary information to allow you to properly schedule your irrigation run times on each zone for peak demand.

There are a few basic rules to follow when designing an irrigation system. Unfortunately many designers have not had adequate training and are therefore not able to provide you with an acceptable plan or have the knowledge to calculate precipitation rates, etc.

Some basic rules are:

- (1) Select and space sprinklers according to spray patterns to achieve even application over zone area.
- (2) Do not mix different type sprinklers on one zone.
- (3) Separate zones in sun areas from zones in shaded areas.
- (4) Separate zones for lawn area from shrub areas.
- (5) Use large enough pipe to provide flow needed without too much pressure loss.
- (6) Many types of sprinklers, valves, pipe and controllers are available, as well as variations in quality and cost. Only experience can be used to determine the right equipment for each application.

To help you understand the application rates of various sprinklers consider these two examples.

Sprinklers for larger areas spaced at 40 ft. apart using a 5 GPM nozzle has an application rate of 0.30 inches per hour. Average run time in July on an every-other day schedule will be 100 minutes or one hour and 40 minutes.

Sprinklers for small areas, spaced at 15 ft. apart, using a 4 GPM nozzle, have an application rate of: 1.7 inches per hour. Average run time in July on an every-other day schedule will be about 18 minutes.

You may wish to use drip irrigation for trees, landscape areas and gardens. Special strainers and pressure reducers should be used on these zones.

Remember you are using ditch water and it is unlawful to cross-connect your irrigation pipe to your potable (house water) pipe.

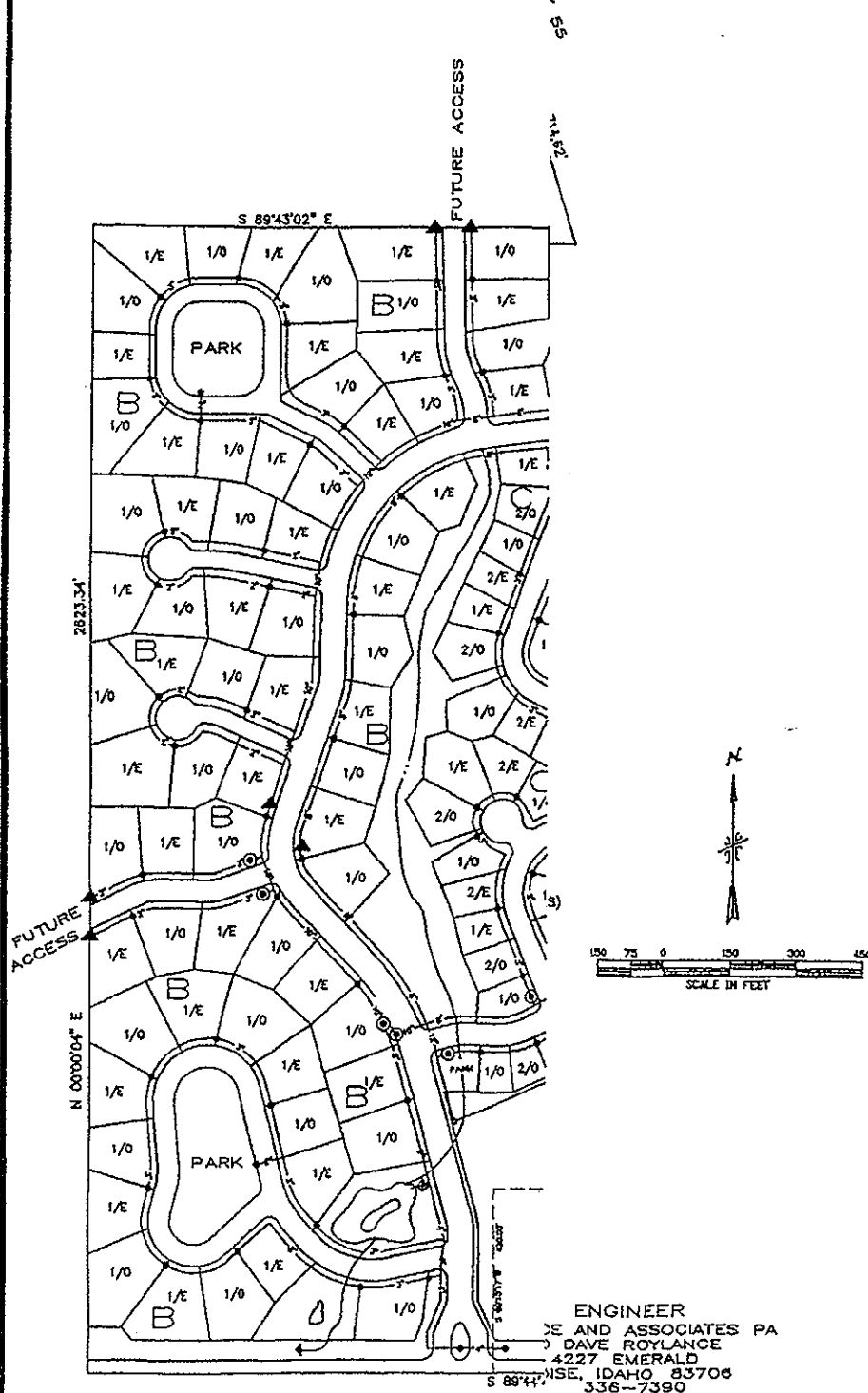
To properly irrigate your landscaped areas within your assigned schedule, your irrigation system must be designed to achieve at least 70% efficiency. Proper design and proper timing of each zone is equally important. The use of moisture sensors to stop irrigation when not needed can eliminate the need to change running times and result in truly automatic irrigation.

IGATION PLAN
GTON HILLS
RTION OF SECTION 3
31E BM ADA COUNTY
IDAHO

DATE	11/22/26	ROLE	W/
NAME	1/1	NAME	1/1
DATE	11/22/26	ROLE	W/
NAME	1/1	NAME	1/1

LEXINGTON HILLS
IRRIGATION PLAN

ROYLANCE AND ASSOCIATES PA
Engineers Surveyors Landplanners
4619 Emerald Suite D-2 Boise Idaho 83706 (208) 336-8800

[illegible]

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ISE, IDAHO 83706
336-7390

JOB NUMBER
9110-1156

$$\frac{1}{10}$$

VERGARA, MARGOT