DELINEATION OF SPRINKLER AND GRAVITY APPLICATION SYSTEMS

Idaho Water Resources Research Institute
University of Idaho

by Bryce A. Contor
September 2, 2004

Idaho Water Resource Research Institute
Technical Report 04-005

Eastern Snake Plain Aquifer Model Enhancement Project Scenario
Document DDW-022

DESIGN DOCUMENT OVERVIEW

Design documents are a series of technical papers addressing specific design topics on the Eastern Snake Plain Aquifer Model Enhancement Project. Each design document will contain the following information: topic of the design document, how that topic fits into the whole project, which design alternatives were considered and which design alternative is proposed. In draft form, design documents are used to present proposed designs to reviewers. Reviewers are encouraged to submit suggested alternatives and comments to the design document. Reviewers include all members of the Eastern Snake Hydrologic Modeling (ESHM) Committee as well as selected experts outside of the committee. The design document author will consider all suggestions from reviewers, update the draft design document, and submit the design document to the Eastern Snake Plain Model Enhancement Project Model Upgrade Program Manager. The Program Manager will make a final decision regarding the technical design of the described component. The author will modify the design document and publish the document in its final form in .pdf format on the ESPAM web site.

The goal of a draft design document is to allow all of the technical groups which are interested in the design of the ESPAM Enhancement to voice opinions on the upgrade design. The final design document serves the purpose of documenting the final design decision. Once the final design document has been published for a specific topic, that topic will no longer be open for reviewer comment. Many of the topics addressed in design documents are subjective in nature. It is acknowledged that some design decisions will be controversial. The goal of the Program Manager and the modeling team is to deliver a well-documented, defensible model which is as technically representative of the physical system as possible, given the practical constraints of time, funding and manpower. Through the mechanism of design documents, complicated design decisions will be finalized and documented. Final model documentation will include all of the design documents, edited to ensure that the “as-built” condition is appropriately represented. This Design Document is the final as-built version, reflecting the actual calculated sprinkler percentages for each irrigation entity and ground water polygon. It reflects the revised surface water irrigation entities modified in spring of 2003.

INTRODUCTION

The model proposes use of “adjustment factors” to calculate field-condition evapotranspiration from predicted evapotranspiration under well-watered, disease free conditions. Because actual evapotranspiration may be affected by the type of application system used (as well as other factors), and because changes in application system type (e.g. gravity to sprinkler) have

occurred during the period of the study, a method for identifying application method and describing changes is required. A secondary reason to identify application method is that the difference between actual irrigated acres and nominal irrigated acres may depend on application method (see Design Document DDW-015).

PREVIOUS WORK AND AVAILABLE DATA

Previous modeling efforts have not included an ET adjustment factor, so there has not been a need to identify application method. Neither Garabedian (1992) nor IDWR (1997) explicitly referred to consideration of application method in irrigation calculations. Goodell (1988) used application method to derive discharge pressure parameters for pumpage calculations, but not for recharge or ET calculations. IDWR (1997) adjusted for non-irrigated inclusions based on a distinction between ground water and surface water, but careful examination of maps indicates that it is likely the difference is actually driven by application method, and water source was used as a surrogate.

Available data include Geographic Information Systems (GIS) electronic maps that delineate the irrigated lands in the study area in 1982 and 1992 as sprinkler or gravity irrigated (IDWR 1982, 1992). The Natural Resource Conservation Service National Resource Inventory (NRI) includes a report of a statistical sample indicating percent of irrigated acres using pressurized (sprinkler)[1] systems by 8-digit Hydrologic Unit Code area or by Major Land Resource Area (NRCS 1997). Figure 1 shows the Major Land Resource Areas within the study area.[2]

[1] NRCS also classifies drip irrigation as a pressurized system but this is such a minor practice within the current calibration period that it is neglected here.
[2] Note that the study-area boundary has been modified since this figure was generated.

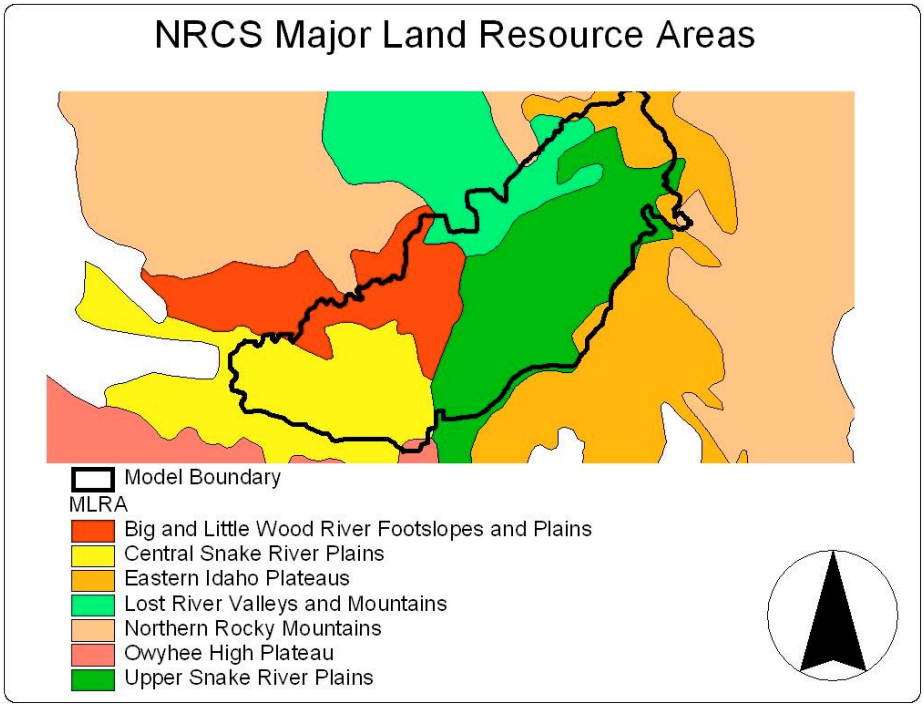

Figure 1. Major Land Resource Areas

Published reports provide limited snapshots of some parts of the study area at specific times (Claiborne 1975, Sullivan and others 1996) or wide-area general trends (Irrigation Journal 1990 and 2000). Natural Resource Conservation Service conservationists (Contor 2002) have provided estimates of the system mix over time, by county or sub-county area. Personal contact with electric utility personnel (Contor 2002) gives some indication of locations and rates of conversion from gravity to sprinkler. These reports and interviews generally provide qualitative, rather than quantitative, information.

This Design Document outlines the timing and magnitude of changes, and presents the method used to describe the changes and apply them to model calibration. The magnitude and calculation of adjustment factors is addressed in Design Document DDW-021.

MAGNITUDE AND EFFECT OF CHANGES

The Egin Bench area has changed from “mostly” gravity irrigation in the mid 1970’s to “mostly” pivot sprinkler irrigation in 1996 (Sullivan and others 1996). This represents an upper limit to changes. A lower limit is represented by the Rigby Fan area, which shows virtually no sprinklers in the 1992 GIS map, and still has very few sprinklers (Johnson 2002).

A change from ten percent sprinkler to ninety percent sprinkler could result in an increase in net evapotranspiration (ET) of about eight percent, as calculated in Table 1:

Table 1
Sample Calculation of Change in ET

Item	**1980 Value**	**2001 Value**
Pristine ET (ft)	2.00	2.00
Sprinkler adjust factor	1.00	1.00
Grav adjust factor	0.90	0.90
Sprinkler percentage	10%	90%
Calculated ET (ft)[3]	1.82	1.98
Change in ET (ft)		0.16
Change in ET (%)		8.4%

If such a change occurred over two million acres, the total effect would be about 1.5×10^{10} ft^3 (350,000 acre feet), or roughly six percent of the aquifer water budget. This represents an upper limit to the possible effect. In the calibration data set, the magnitude of change, the number of acres affected, and the difference in adjustment factors were all actually smaller than in this example.

A potential compounding effect is the inclusion of more acres of actual irrigation within a nominally irrigated parcel. Preliminary work for 1980, for example, suggested that nominal irrigated acreage must be reduced by 17% on gravity-irrigated lands but only by five percent on sprinkler-irrigated lands. Actual final data used in model calibration used the same reduction for sprinkler- and gravity-irrigated lands (see Design Document DDW-015).

TIMING OF CHANGES

Tables 2 below and the state-wide irrigated acres from the Irrigation Journal magazine's "Irrigation Survey" (1990 and 2000) indicate that in general, the rate of conversion to sprinklers has been steady, but slowly declining over time. Individual areas have had different temporal patterns of change. For instance, in the Fall River Rural Electric Coop service area, conversions proceeded at a high rate in the 1970s, then at a steady low rate from 1980 to 1995. Since 1995, few conversions from gravity to sprinkler have occurred (Contor 2002). Most conversions in the Egin Bench area occurred within a few years during the late 1980s (Contor 2002).

[3] Calculated ET = Pristine ET * (Sprinkler adj. factor * Sprinkler percentage + Gravity adj. factor * (1 - Sprinkler percentage))

FACTORS DRIVING CHANGES

Gravity irrigation is more suited to certain soil types and slopes (Merriam 1977). The spatial distribution of soils and landforms, and the observation of the grouping of sprinkler and gravity irrigated lands on the 1992 map, indicate that conversion may occur more often near areas of existing sprinklers. Figure 2 shows a sample of the grouping of system type in 1992.

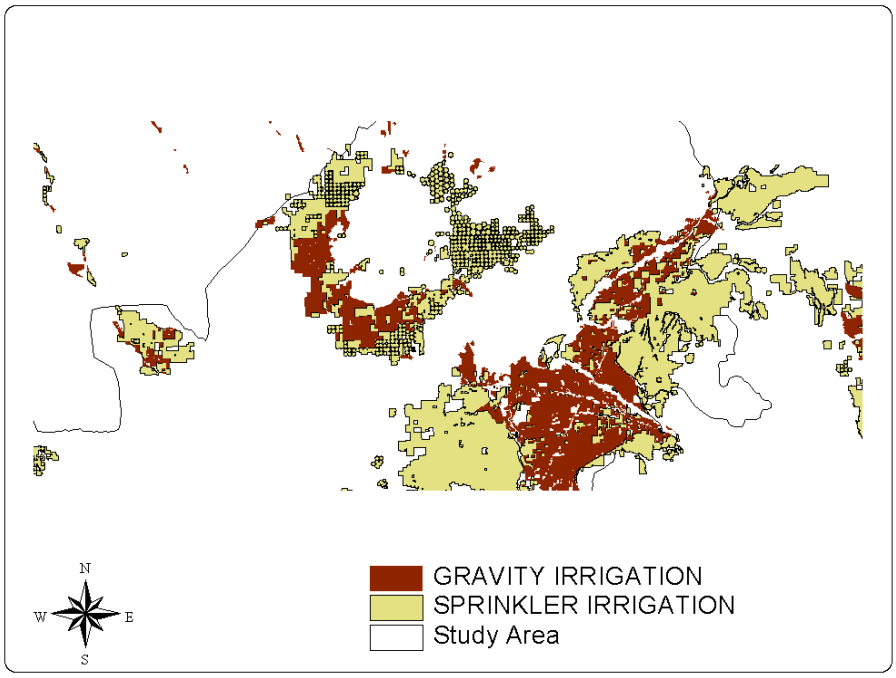

Figure 2. Map of application methods used, 1992

The availability of three-phase electrical power is another spatially-distributed factor that may affect conversion. Utility companies indicate that this is not a major factor within the study area (Contor 2002). Energy cost varies spatially by power provider and by pumping lift. Because of the interaction between the cost of lifting water and pressurizing water, high energy costs favor conversion where lifts are high, and penalize conversion where lifts are low. This implies conversion is more likely in areas predominantly irrigated from ground water, since surface water lifts are very low except where water is pumped from incised canyons.

Other economic factors that affect conversion, such as commodity values, agronomic production factors, and the relative costs of labor, management, and sprinkler hardware, probably have a much weaker spatial component.

UNCERTAINTY

Uncertainty in Data

The 1992 GIS map (IDWR 1992a) was constructed from aerial photographs, using extensive ground truthing and water right data. The uncertainty associated with this data set should be small because of the care used in its compilation. The 1982 map (IDWR 1987) was digitized from paper maps made by NRCS personnel in the field. Its uncertainty is also likely to be small. The NRI data are based upon statistical point sampling. These data are "generally reliable at the 95% confidence interval for state and certain broad substate area analyses. Generally, analyses that aggregate data points by smaller geographic areas and/or more specific criteria result in fewer data points for each aggregation and therefore less reliable estimates. NRI maps reflect national patterns rather than site- specific information" (NRCS 1997). The sample points are distributed throughout the HUC, rather than concentrated on irrigated lands (Swenson 2002), so the values for predominantly non-irrigated HUCs may reflect only a few samples of irrigated land. The NRI data for the HUCs within the study area are shown in Table 2. While overall trends and values are as expected, period-to-period changes for individual HUCs (Palisades, Little Lost, Willow) appear unreasonable, and likely have been biased by too few samples of irrigated land. Because MLRAs are geographically larger, the data should be more reliable by MLRA than by 8-digit HUC.

Table 2
Sprinkler Percentage by 8-digit HUC
Compiled using GIS analysis of data from IDWR (1980, 1987, 1992a, 1992b) and NRCS (2002)

Abbreviated Name	Number	1982	1987	1992	1997
Palisades	17040104	48	33	39	44
Idaho Falls	17040201	63	64	65	64
Upper Henrys	17040202	93	93	93	93
Lower Henrys	17040203	70	72	72	80
Teton	17040204	63	66	69	68
Willow	17040205	100	100	100	24
American Falls	17040206	89	90	89	87
Blackfoot	17040207	66	82	82	82
Portneuf	17040208	80	78	81	82
Lake Walcott	17040209	58	72	79	81
Raft	17040210	65	86	91	93
Upper Snake -Rock	17040212	39	46	51	55
Beaver-Camas	17040214	65	66	72	79
Medicine Lodge	17040215	47	55	56	56
Little Lost	17040218	56	63	77	78
Big Lost	17040218	56	63	77	78
Big Wood	17040219	47	55	57	59
Little Wood	17040221	70	83	76	86
Simple Avg		64	67	69	70

Effect of Uncertainty

Because the application method is used to assign ET adjustment factors, the effect of uncertainty depends on the difference in sprinkler and gravity adjustment factors. This difference could be as much as ten percentage points, with sprinkler ET adjustment factors possibly as high as 1.05 (Allen 2002). In model calibration, an adjustment factor of 1.05 was used for sprinkler irrigation and a factor of 1.00 was used for gravity irrigation. A confounding effect is the possibility that the crop mix under sprinklers could be different, and therefore the pre-adjustment ET could be different, than under gravity irrigation.

To test the magnitude and effect of uncertainty in application system type, including the crop-mix effect, a region of seventy two square miles in west Jefferson County was evaluated in detail. The crop mix under sprinkler and gravity irrigation was determined using four methods. Two were provided by GIS analysis for 1982 and 1992, and two were based on Farm Service Agency (FSA) aerial photographs for 1983 and 1992. The 1982 GIS analysis used the 1980 LANDSAT classification of crop type (IDWR 1980) and the 1982 NRCS classification of application method (IDWR 1987). The 1992 GIS analysis used the 1992 aerial photo classification of application method (IDWR 1992a) and the 1992 LANDSAT classification of crop type (IDWR 1992b). The FSA photo interpretation used a statistical sample of twenty of the seventy two sections (of which only thirteen produced useable data). Interpretation of crop and system type was done visually, with some training from FSA personnel and relying upon the investigator's familiarity with some of the farms.[4] A fifth crop mix was calculated from hypothetical crop rotations for gravity- and sprinkler-irrigated lands in the area.

For each method, a difference in crop-weighted base ET (using standard, unadjusted ET rates) was calculated for sprinkler and gravity lands. All comparisons showed higher base ET on gravity irrigated lands, because potatoes - a lower ET crop - are more prevalent on sprinkler lands, and alfalfa - a higher ET crop - is more prevalent on gravity lands. The smallest difference was1.4 percent, using the 1983 FSA results. The largest difference was 6.4, using the 1992 GIS comparison.

The classification of the FSA slides was difficult, and confidence in the results is low. However, the difference between the 1982/1983 FSA and GIS determination of sprinkler percentage was only fourteen percentage points, and the 1992 difference ten percentage points. This gives some indication of the possible range of uncertainty in determinations of sprinkler percentage.

To assess the effect of uncertainty, a hypothetical scenario was constructed where the "known" values were the 1992 GIS sprinkler and gravity base ET values (since these showed the largest difference of the five comparisons), the 1982 GIS sprinkler percentage, and reasonable assumptions for other parameters. Table 3 shows that the higher ET adjustment factor and lower base ET for sprinklers tend to offset one another, and the consequence of an error in sprinkler percentage is slight:

[4] Due to privacy issues, access to actual reported crops, and results of original FSA determination by experienced personnel, were not available.

Table 3
Effect of Error in Sprinkler Percentage

Parameter	"True"	Error 1 (double)	Error 2 (half)
Sprinkler %	26%	52%	13%
Sprinkler ET Adjustment Factor	1.05	1.05	1.05
Gravity ET Adjustment Factor	0.95	0.95	0.95
Base ET - Sprinkler (ft/yr)	2.26	2.26	2.26
Base ET - Gravity (ft/yr)	2.42	2.42	2.42
Sprinkler % x Sprinkler Adj. x Sprinkler ET (ft/yr)	0.62	1.24	0.31
Gravity % x Gravity Adj. x Gravity ET (ft/yr)	1.70	1.10	2.00
Sum (weighted avg ET, ft/yr)	2.32	2.34	2.31
Error (% of true value)		+ 0.9%	-0.4%

While the effect of different crop mix on gravity- and sprinkler-irrigated lands is acknowledged, it is not likely that data will be identified to allow representing this effect in the water budget. Table 4 shows a second calculation that applies the average crop mix to all lands. Only the ET adjustment factors differ.

Table 4
Effect of Error in Sprinkler Percentage
Average Crop Mix Applied

Parameter	"True"	Error 1 (double)	Error 2 (half)
Sprinkler %	26%	52%	13%
Sprinkler ET Adjustment Factor	1.05	1.05	1.05
Gravity ET Adjustment Factor	0.95	0.95	0.95

Parameter	"True"	Error 1 (double)	Error 2 (half)
Base ET - (ft/yr)	2.38	2.38	2.38
Sprinkler % x Sprinkler Adj. x ET (ft/yr)	0.65	1.30	0.32
Gravity % x Gravity Adj. x ET (ft/yr)	1.67	1.09	1.97
Sum (weighted avg ET, ft/yr)	2.32	2.39	2.29
Error (% of true value)		+ 3%	-1.4%

In Table 3, a "correct" crop mix with correct sprinkler percentage gave 2.32 feet of ET. In Table 4, an "average" crop mix gave the same ET. This calculation shows that if the sprinkler percentage is correct, the application of an average crop mix to all lands does not affect the water budget. The calculations also shows that the magnitude of potential error is small relative to the uncertainty of the sprinkler percentage, even when cropping differences between sprinklers and gravity are ignored.

The sprinkler percentage is also used to determine the discount of irrigated acres within a nominally irrigated parcel, to account for roads, ditch banks, stack yards, corrals, etc. Design Document DDW-015 shows that the discount factors could differ by four to twelve percentage points, depending on the land-use data source. The factors used in model calibration were equal for sprinkler and gravity irrigated lands, so this potential effect did not materialize.

INCORPORATING APPLICATION METHOD DATA INTO THE RECHARGE CALCULATION

Because of the potential differences in ET adjustment factor on sprinkler- and gravity-irrigated lands, and because of evidence of significant spatial variability in sprinkler mix, the possibility of using a single ratio over the entire study area was rejected. Because of evidence of significant conversions to sprinkler in some areas over the last 20 years, the possibility of using a single set of mix parameters over the calibration period was also rejected.

Since the 1982 and 1992 GIS maps represent the most certain data, and the data with the best spatial resolution, these maps were used as the primary data source. The NRI data are statistically-based, and quantify percentages, so they were used to establish overall percentages for 1987 and 1997. The MLRA-level of spatial resolution was used because of sample size problems revealed in

Table 2. Figure 3 and Figure 4 illustrate the reported trends and variability of two representative MLRA areas.

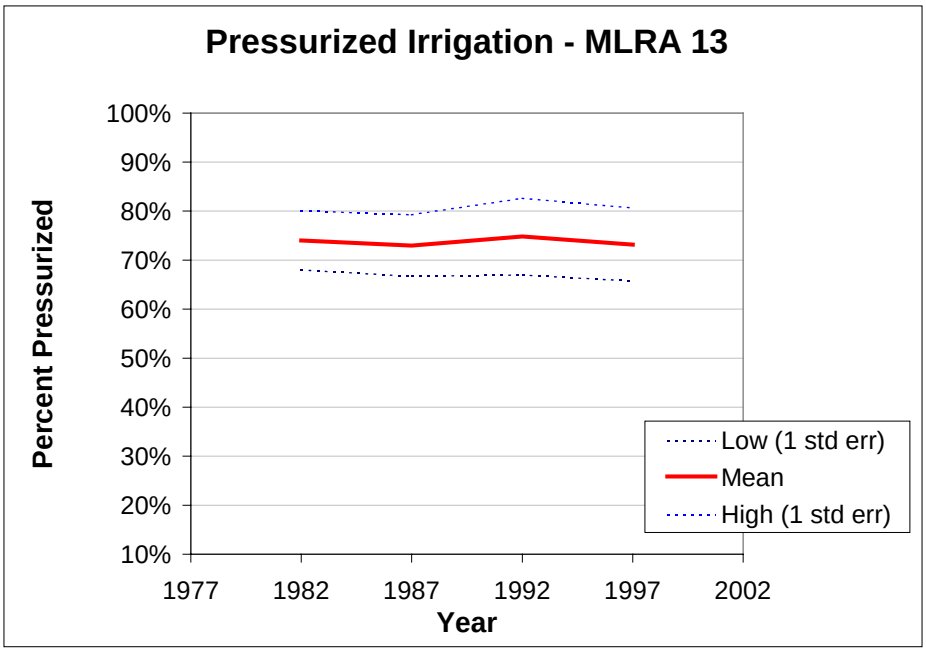

Figure 3. Percent Pressurized Irrigation in MLRA 13 (Eastern Idaho Plateaus)

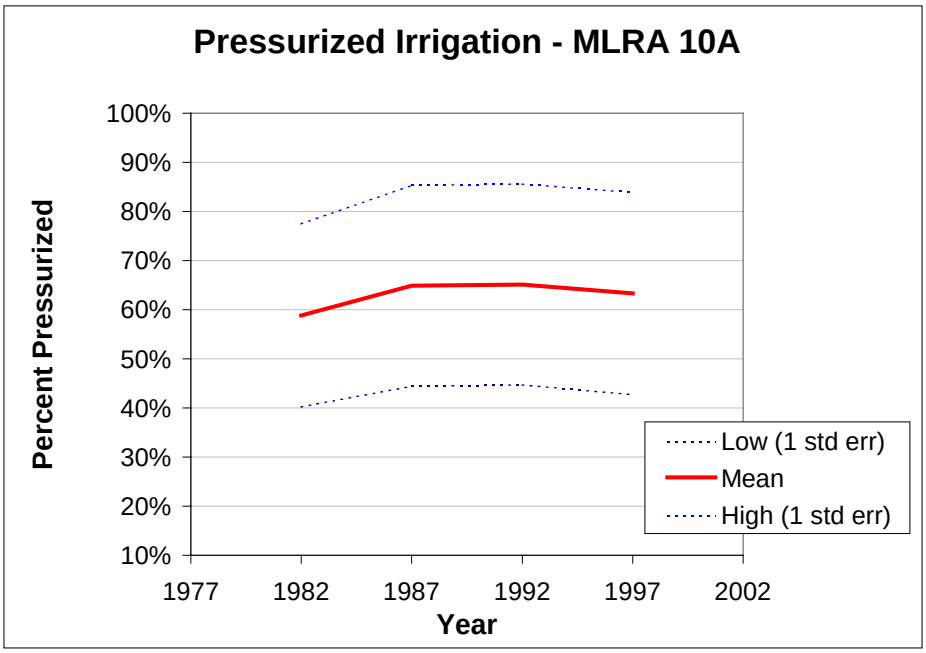

Figure 4. Percent Pressurized Irrigation in MLRA 10A (Big and Little Wood River Footslopes)

One method of incorporating changes in application method into the recharge calculations would be to use GIS tools to construct new maps from existing maps, changing the distribution system type on discrete, individual plots of land. The classification of individual plots would not be correct, but the mix within a given area would properly reflect underlying data. This method was rejected because construction of maps might imply a level of knowledge that does not exist, and invite inappropriate uses of the maps.

The chosen method is to calculate a sprinkler/gravity percentage for representative spatial areas, for appropriate time periods. This is done without identifying physical polygons on a map as "sprinkler" or "gravity." The computer programs that calculate recharge will apply the mix percentage uniformly to each spatial area, during each time period. The spatial area could be as small as a 40-acre field, or as large as the entire study area. These are both rejected because neither matches the level of detail of available data. Likewise, using individual model cells represents a resolution far finer than available data, and using counties discards some available resolution. Because irrigation entities are defined based on the level of knowledge of various characteristics, including sprinkler/gravity percentage, the surface-water irrigation entity or ground-water polygon appears to be the appropriate spatial area to represent. The practical effect of this method is that recharge will be uniformly distributed across an entity or polygon. This is reasonable in that the entity represents the smallest discrete unit for which unique knowledge exists.

Initial tables of sprinkler percentage for each irrigation entity or polygon were constructed for 1982 and 1992, using GIS and the 1982 and 1992 maps. From the entity and water source maps[5] all ground-water-irrigated and mixed-source lands in each ground-water polygon, and all surface-water-irrigated and mixed-source lands in each surface-water entity were identified. These maps were intersected with the application method maps to produce maps of irrigated lands with appropriate water source, by application method, by polygon or entity. The total acres of each method, within each entity, were used to calculate a sprinkler percentage for each entity or polygon. This process was repeated for 1982 and 1992. The result was a table of values, having a unique sprinkler percentage for each irrigation entity or polygon, for the break-point years 1982 and 1992.

The NRI data were used as a secondary source, to determine sprinkler percentages for break-point years 1980, 1987, 1997 and 2000. Other years were linearly interpolated based on these break-point values. Because of sample-size concerns illustrated in Table 2, the NRI data were used on an MLRA-level spatial resolution. Most of the MLRAs are only partly within the study area, so the MLRA percentages were not expected to exactly match the 1982/1992 map-based percentages. The relationship between the MLRA data and the map-

[5] See Design Documents DDW-008 and DDW-009 for discussion of irrigation entities and ground-water polygons, and Design Document DDW-017 for discussion of source of irrigation water.

based tables for 1982 and 1992 were used to guide the application of MLRA data to 1987 and 1997. For each entity or polygon, the 1980, 1987, 1997, and 2000 estimates were manually adjusted in an Excel spreadsheet until the resulting graph of changes over time approximated the shape of the MLRA graph. If other data (such as NRCS or power company reports) gave refining details, these details were also honored. For instance, for polygon IEGW501 the 1987 value was set higher than a linear interpolation to correspond to the shape of the MLRA graph. The 1980 extrapolation was made to approximate a linear trend through 1992, and the later extrapolations were made to approximate the slope of the MLRA graph while considering current percentages reported by irrigation district personnel. The outcome is illustrated in Figure 5.

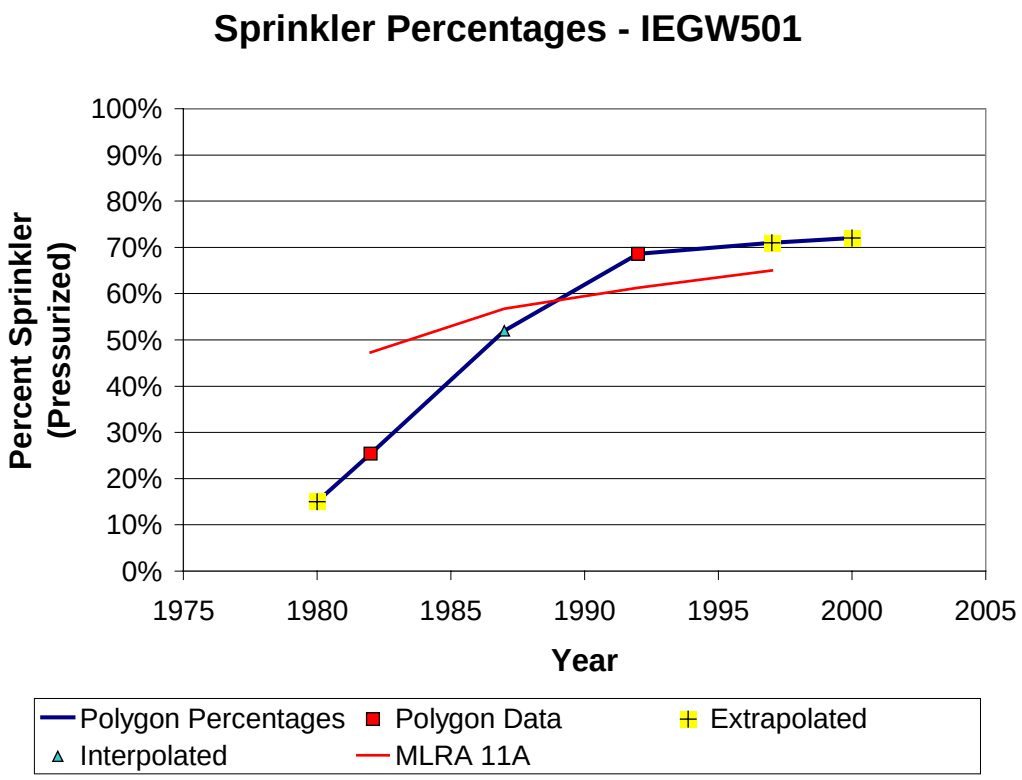

Figure 5. Sample Sprinkler Percentage for Ground Water Polygon IEGW501 (A & B Irrigation District - Ground Water)

RESULTS

The complete table used in model calibration includes values for each stress period, with intermediate values linearly interpolated between breakpoints or extrapolated beyond breakpoints. The complete table is presented in Appendix A. The analysis was performed on an interim map of irrigation entities and the results have been adapted to the current map of irrigation entities. Figures 6 through 9 show the spatial distribution of the sprinkler fraction by ground water polygon and by surface water irrigation entity for the years 1980 and 2000.

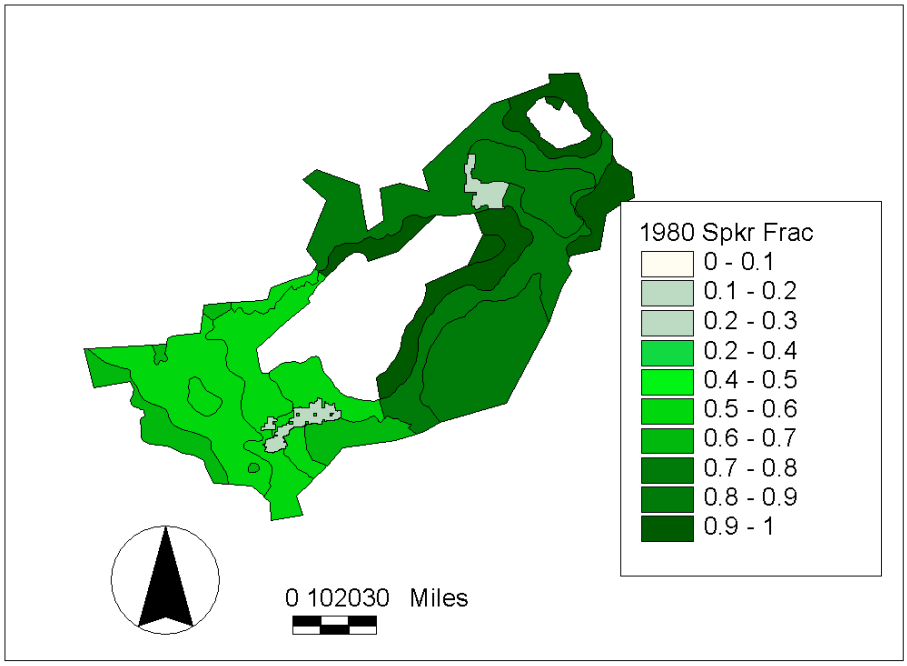

Figure 6. Sprinkler Fraction by Ground-water Polygon, 1980

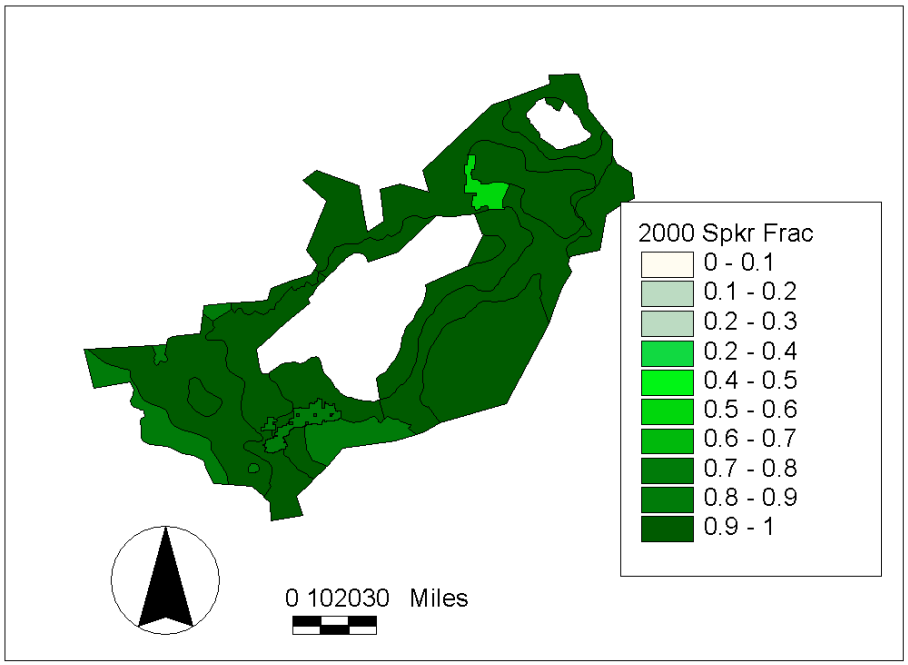

Figure 7. Sprinkler Fraction by Ground-water Polygon, 2000

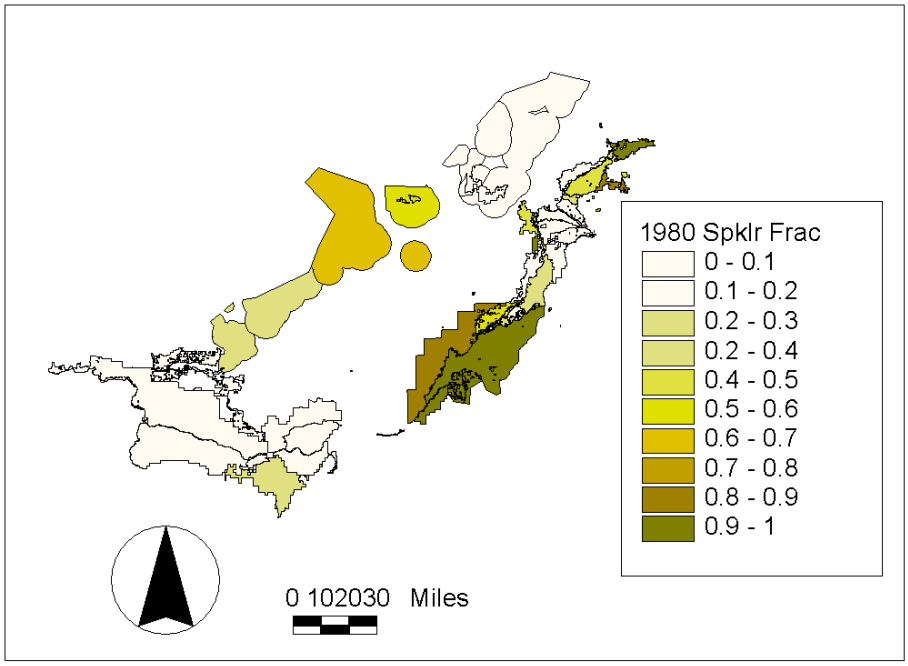

Figure 8. Sprinkler Fraction by Surface-water Entity, 1980.

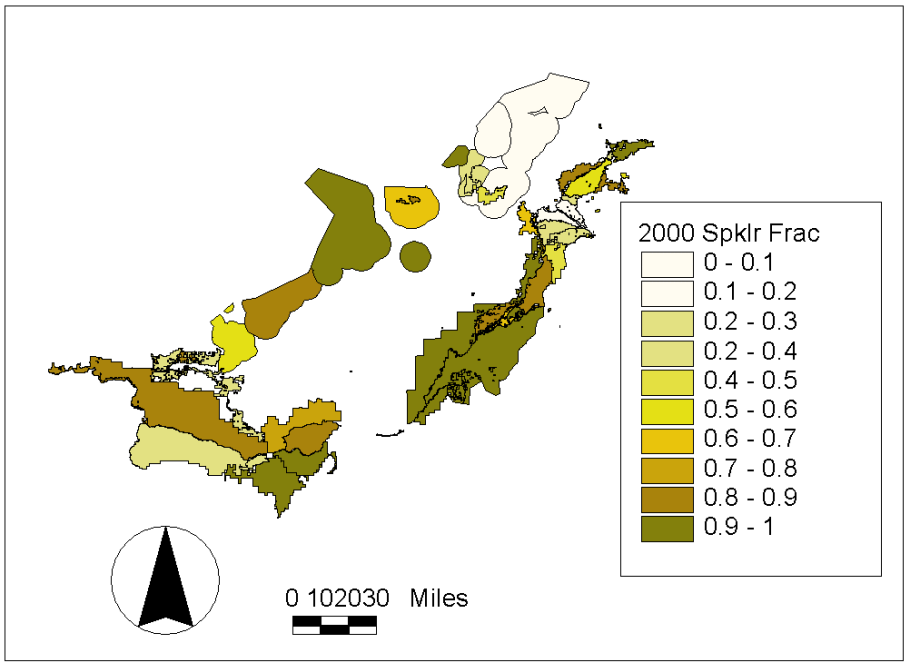

Figure 9. Sprinkler Fraction by Surface-water Entity, 2000

DESIGN DECISION

Individual irrigation entities provide a level of detail that matches available knowledge and limits the computational burden of the recharge program. The factors that drive sprinkler conversion have a similar spatial distribution to the distribution of irrigation entities, and historic patterns of application method were considered in the creation of irrigation entities. Sprinkler/Gravity mix is carried in the calculations as an attribute of the irrigation entity or ground-water polygon. Consequences of an error in sprinkler percentage are minor.

GIS technology allowed calculation of sprinkler/gravity ratios by irrigation entity for 1982 and 1992, based on actual mapped polygons of application method. These are the basis of all mix percentages. National Resource Inventory data by Major Land Resource Area were used to set 1980, 1987, 1997 and 2000 values relative to the map-based values for 1982 and 1992. Qualitative data were used to aid this interpolation and extrapolation. Final sprinkler ratios by break-point year and by irrigation entity or polygon are reported in Table 5. A final table for use in the recharge program includes interpolated values for stress periods between the break-point years.

The recharge program assigns ET adjustment factors according to the unique sprinkler percentage for each irrigation entity, for each year. ET adjustment factors (discussed in Design Document DDW-021) are tabulated by

irrigation entity or polygon and application method. The recharge program also assigns irrigation discount factors to account for non-irrigated inclusions (described in Design Document DDW-015) according to the application method, by irrigation entity or polygon.

REFERENCES

Allen, R.G. 2002. University of Idaho. Personal communication.

Contor, B. 2002. Unpublished results of personal communications with utility company representatives and Natural Resource Conservation Service personnel. Idaho Water Resources Research Institute.

Claiborne, B.A. 1975. Predicting Attainable Irrigation Efficiencies in the Upper Snake River Region. Masters Thesis, University of Idaho.

Garabedian, S.P. 1992. Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho. USGS RASA report 1408-F.

Goodell, S. A. Water Use on the Snake River Plain, Idaho and Eastern Oregon. USGS RASA report 1408-E.

Idaho Department of Water Resources. 1980. GIS shapefile "rasa80lc.shp." Land-use classification of 1980 LANDSAT data.

Idaho Department of Water Resources. 1987. GIS shapefile "IWM.shp." Digitized version of 1982 paper maps based on field surveys by USDA Natural Resource Conservation Service.

Idaho Department of Water Resources. 1992a. GIS shapefile "Snklc92.shp." Based on 1987 aerial photographs, extensive field inspection, and water-rights data.

Idaho Department of Water Resources. 1992b. GIS shapefile "EspaLC92.shp." Classification of 1992 LANDSAT image.

Irrigation Journal Magazine. 1990 and 2000. *Irrigation Survey.*

Johnson, H. 2002. Jefferson County Natural Resource Conservation Service conservationist. Telephone interview.

Merriam, J.L. 1977. Efficient Irrigation: You Can Plant More Land With Less Water. California Polytechnic Institute.

Natural Resource Conservation Service. 1997. Natural Resource Inventory. Electronic data received via nri@rid8.nhq.nrcs.usda.gov.

Sullivan, W.H., G.S. Johnson, J.L. Casper, C.E. Brockway. 1996. An Assessment of the Capability of Existing Canal Companies to Deliver

Artificial Recharge Water to the Snake Plain Aquifer in Southeast Idaho. Idaho Water Resources Research Institute.

Swenson, H.K. 2002. Natural Resource Conservation Service, Boise, Idaho. Personal communication.

Appendix A. Complete Table of Sprinkler Fraction by Six-month Stress Period

ENTITY_ID	SP001	SP002	SP003	SP004	SP005	SP006	SP007	SP008	SP009	SP010
Start Date	May-80	Oct-80	May-81	Oct-81	May-82	Oct-82	May-83	Oct-83	May-84	Oct-84
IEGW501	0.150	0.150	0.202	0.202	0.254	0.254	0.307	0.307	0.360	0.360
IEGW502	0.200	0.200	0.215	0.215	0.230	0.230	0.246	0.246	0.262	0.262
IEGW503	0.875	0.875	0.880	0.880	0.885	0.885	0.890	0.890	0.895	0.895
IEGW504	0.981	0.981	0.981	0.981	0.982	0.982	0.983	0.983	0.983	0.983
IEGW505	0.983	0.983	0.984	0.984	0.986	0.986	0.987	0.987	0.988	0.988
IEGW506	0.770	0.770	0.786	0.786	0.803	0.803	0.818	0.818	0.834	0.834
IEGW507	0.580	0.580	0.619	0.619	0.657	0.657	0.692	0.692	0.726	0.726
IEGW508	0.530	0.530	0.573	0.573	0.617	0.617	0.661	0.661	0.706	0.706
IEGW509	0.640	0.640	0.666	0.666	0.692	0.692	0.715	0.715	0.739	0.739
IEGW600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW000	0.333	0.333	0.353	0.353	0.373	0.373	0.399	0.399	0.424	0.424
IESW001	0.150	0.150	0.230	0.230	0.311	0.311	0.353	0.353	0.394	0.394
IESW002	0.825	0.825	0.836	0.836	0.847	0.847	0.858	0.858	0.868	0.868
IESW005	0.700	0.700	0.716	0.716	0.731	0.731	0.747	0.747	0.763	0.763
IESW007	0.147	0.147	0.156	0.156	0.165	0.165	0.175	0.175	0.185	0.185
IESW008	0.540	0.540	0.555	0.555	0.570	0.570	0.586	0.586	0.602	0.602
IESW009	0.015	0.015	0.033	0.033	0.050	0.050	0.066	0.066	0.082	0.082
IESW010	0.010	0.010	0.080	0.080	0.150	0.150	0.240	0.240	0.330	0.330
IESW011	0.440	0.440	0.454	0.454	0.467	0.467	0.480	0.480	0.492	0.492
IESW012	0.867	0.867	0.868	0.868	0.870	0.870	0.871	0.871	0.872	0.872
IESW014	0.210	0.210	0.248	0.248	0.286	0.286	0.319	0.319	0.352	0.352
IESW015	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.004	0.004
IESW016	0.050	0.050	0.093	0.093	0.136	0.136	0.258	0.258	0.381	0.381
IESW018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

ENTITY_ID	SP001	SP002	SP003	SP004	SP005	SP006	SP007	SP008	SP009	SP010
Start Date	May-80	Oct-80	May-81	Oct-81	May-82	Oct-82	May-83	Oct-83	May-84	Oct-84
IESW020	0.050	0.050	0.066	0.066	0.082	0.082	0.104	0.104	0.125	0.125
IESW022	0.250	0.250	0.317	0.317	0.384	0.384	0.437	0.437	0.490	0.490
IESW025	0.210	0.210	0.264	0.264	0.318	0.318	0.374	0.374	0.431	0.431
IESW027	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.092	0.092
IESW028	0.130	0.130	0.174	0.174	0.219	0.219	0.285	0.285	0.351	0.351
IESW029	0.035	0.035	0.052	0.052	0.068	0.068	0.085	0.085	0.101	0.101
IESW030	0.180	0.180	0.236	0.236	0.292	0.292	0.360	0.360	0.427	0.427
IESW031	0.950	0.950	0.955	0.955	0.961	0.961	0.965	0.965	0.968	0.968
IESW032	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.240	0.240
IESW033	0.970	0.970	0.973	0.973	0.976	0.976	0.979	0.979	0.982	0.982
IESW034	0.540	0.540	0.561	0.561	0.582	0.582	0.603	0.603	0.625	0.625
IESW035	0.020	0.020	0.038	0.038	0.056	0.056	0.083	0.083	0.110	0.110
IESW036	0.020	0.020	0.034	0.034	0.049	0.049	0.063	0.063	0.077	0.077
IESW037	0.145	0.145	0.187	0.187	0.229	0.229	0.267	0.267	0.305	0.305
IESW038	0.251	0.251	0.269	0.269	0.286	0.286	0.279	0.279	0.272	0.272
IESW039	0.270	0.270	0.283	0.283	0.296	0.296	0.291	0.291	0.285	0.285
IESW040	0.400	0.400	0.464	0.464	0.528	0.528	0.582	0.582	0.637	0.637
IESW041	0.000	0.000	0.008	0.008	0.017	0.017	0.038	0.038	0.058	0.058
IESW044	0.020	0.020	0.030	0.030	0.041	0.041	0.052	0.052	0.064	0.064
IESW051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IESW052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IESW053	0.530	0.530	0.545	0.545	0.560	0.560	0.570	0.570	0.580	0.580
IESW054	0.319	0.319	0.339	0.339	0.359	0.359	0.381	0.381	0.402	0.402
IESW055	0.000	0.000	0.004	0.004	0.007	0.007	0.011	0.011	0.015	0.015
IESW056	0.451	0.451	0.460	0.460	0.468	0.468	0.476	0.476	0.484	0.484
IESW057	0.648	0.648	0.662	0.662	0.676	0.676	0.694	0.694	0.712	0.712

ENTITY_ID	SP011	SP012	SP013	SP014	SP015	SP016	SP017	SP018	SP019	SP020
Start Date	May-85	Oct-85	May-86	Oct-86	May-87	Oct-87	May-88	Oct-88	May-89	Oct-89
IEGW501	0.414	0.414	0.467	0.467	0.520	0.520	0.553	0.553	0.586	0.586
IEGW502	0.278	0.278	0.294	0.294	0.310	0.310	0.326	0.326	0.341	0.341
IEGW503	0.900	0.900	0.905	0.905	0.910	0.910	0.915	0.915	0.920	0.920
IEGW504	0.984	0.984	0.985	0.985	0.986	0.986	0.986	0.986	0.987	0.987
IEGW505	0.990	0.990	0.991	0.991	0.992	0.992	0.993	0.993	0.994	0.994
IEGW506	0.849	0.849	0.865	0.865	0.880	0.880	0.887	0.887	0.895	0.895
IEGW507	0.761	0.761	0.795	0.795	0.830	0.830	0.845	0.845	0.860	0.860
IEGW508	0.751	0.751	0.795	0.795	0.840	0.840	0.860	0.860	0.880	0.880
IEGW509	0.763	0.763	0.786	0.786	0.810	0.810	0.821	0.821	0.832	0.832
IEGW600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW000	0.449	0.449	0.474	0.474	0.499	0.499	0.511	0.511	0.522	0.522
IESW001	0.436	0.436	0.478	0.478	0.520	0.520	0.551	0.551	0.583	0.583
IESW002	0.879	0.879	0.889	0.889	0.900	0.900	0.904	0.904	0.907	0.907
IESW005	0.779	0.779	0.794	0.794	0.810	0.810	0.824	0.824	0.838	0.838
IESW007	0.195	0.195	0.205	0.205	0.215	0.215	0.220	0.220	0.225	0.225
IESW008	0.618	0.618	0.634	0.634	0.650	0.650	0.666	0.666	0.681	0.681
IESW009	0.098	0.098	0.114	0.114	0.130	0.130	0.141	0.141	0.152	0.152
IESW010	0.420	0.420	0.510	0.510	0.600	0.600	0.627	0.627	0.653	0.653
IESW011	0.505	0.505	0.517	0.517	0.530	0.530	0.536	0.536	0.542	0.542
IESW012	0.873	0.873	0.874	0.874	0.875	0.875	0.875	0.875	0.876	0.876
IESW014	0.385	0.385	0.417	0.417	0.450	0.450	0.469	0.469	0.488	0.488
IESW015	0.006	0.006	0.008	0.008	0.010	0.010	0.011	0.011	0.012	0.012
IESW016	0.504	0.504	0.627	0.627	0.750	0.750	0.762	0.762	0.773	0.773
IESW018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW020	0.147	0.147	0.168	0.168	0.190	0.190	0.197	0.197	0.204	0.204
IESW022	0.543	0.543	0.597	0.597	0.650	0.650	0.673	0.673	0.695	0.695

ENTITY_ID	SP011	SP012	SP013	SP014	SP015	SP016	SP017	SP018	SP019	SP020
Start Date	May-85	Oct-85	May-86	Oct-86	May-87	Oct-87	May-88	Oct-88	May-89	Oct-89
IESW025	0.487	0.487	0.544	0.544	0.600	0.600	0.620	0.620	0.640	0.640
IESW027	0.138	0.138	0.184	0.184	0.230	0.230	0.245	0.245	0.261	0.261
IESW028	0.417	0.417	0.484	0.484	0.550	0.550	0.583	0.583	0.616	0.616
IESW029	0.117	0.117	0.134	0.134	0.150	0.150	0.168	0.168	0.186	0.186
IESW030	0.495	0.495	0.562	0.562	0.630	0.630	0.664	0.664	0.698	0.698
IESW031	0.972	0.972	0.976	0.976	0.980	0.980	0.984	0.984	0.987	0.987
IESW032	0.360	0.360	0.480	0.480	0.600	0.600	0.630	0.630	0.660	0.660
IESW033	0.985	0.985	0.987	0.987	0.990	0.990	0.991	0.991	0.992	0.992
IESW034	0.647	0.647	0.668	0.668	0.690	0.690	0.700	0.700	0.710	0.710
IESW035	0.136	0.136	0.163	0.163	0.190	0.190	0.208	0.208	0.225	0.225
IESW036	0.092	0.092	0.106	0.106	0.120	0.120	0.126	0.126	0.132	0.132
IESW037	0.344	0.344	0.382	0.382	0.420	0.420	0.458	0.458	0.495	0.495
IESW038	0.265	0.265	0.258	0.258	0.251	0.251	0.244	0.244	0.237	0.237
IESW039	0.280	0.280	0.275	0.275	0.270	0.270	0.265	0.265	0.259	0.259
IESW040	0.691	0.691	0.746	0.746	0.800	0.800	0.824	0.824	0.849	0.849
IESW041	0.079	0.079	0.099	0.099	0.120	0.120	0.134	0.134	0.147	0.147
IESW044	0.076	0.076	0.088	0.088	0.100	0.100	0.112	0.112	0.124	0.124
IESW051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IESW052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IESW053	0.590	0.590	0.600	0.600	0.610	0.610	0.614	0.614	0.618	0.618
IESW054	0.424	0.424	0.446	0.446	0.467	0.467	0.476	0.476	0.484	0.484
IESW055	0.018	0.018	0.022	0.022	0.026	0.026	0.029	0.029	0.032	0.032
IESW056	0.491	0.491	0.499	0.499	0.507	0.507	0.512	0.512	0.518	0.518
IESW057	0.730	0.730	0.749	0.749	0.767	0.767	0.776	0.776	0.785	0.785

ENTITY_ID	SP021	SP022	SP023	SP024	SP025	SP026	SP027	SP028	SP029	SP030
Start Date	May-90	Oct-90	May-91	Oct-91	May-92	Oct-92	May-93	Oct-93	May-94	Oct-94
IEGW501	0.620	0.620	0.653	0.653	0.686	0.686	0.691	0.691	0.696	0.696
IEGW502	0.357	0.357	0.373	0.373	0.389	0.389	0.411	0.411	0.433	0.433
IEGW503	0.924	0.924	0.929	0.929	0.934	0.934	0.939	0.939	0.944	0.944
IEGW504	0.987	0.987	0.988	0.988	0.989	0.989	0.989	0.989	0.990	0.990
IEGW505	0.995	0.995	0.996	0.996	0.997	0.997	0.997	0.997	0.998	0.998
IEGW506	0.902	0.902	0.909	0.909	0.917	0.917	0.922	0.922	0.928	0.928
IEGW507	0.874	0.874	0.889	0.889	0.904	0.904	0.907	0.907	0.910	0.910
IEGW508	0.900	0.900	0.920	0.920	0.940	0.940	0.944	0.944	0.949	0.949
IEGW509	0.842	0.842	0.853	0.853	0.864	0.864	0.867	0.867	0.870	0.870
IEGW600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW000	0.533	0.533	0.544	0.544	0.555	0.555	0.566	0.566	0.577	0.577
IESW001	0.614	0.614	0.645	0.645	0.676	0.676	0.683	0.683	0.690	0.690
IESW002	0.911	0.911	0.915	0.915	0.919	0.919	0.921	0.921	0.923	0.923
IESW005	0.852	0.852	0.866	0.866	0.880	0.880	0.891	0.891	0.902	0.902
IESW007	0.229	0.229	0.234	0.234	0.239	0.239	0.244	0.244	0.248	0.248
IESW008	0.697	0.697	0.713	0.713	0.729	0.729	0.743	0.743	0.757	0.757
IESW009	0.163	0.163	0.174	0.174	0.185	0.185	0.192	0.192	0.199	0.199
IESW010	0.680	0.680	0.707	0.707	0.733	0.733	0.757	0.757	0.780	0.780
IESW011	0.548	0.548	0.554	0.554	0.560	0.560	0.566	0.566	0.572	0.572
IESW012	0.877	0.877	0.878	0.878	0.879	0.879	0.883	0.883	0.886	0.886
IESW014	0.507	0.507	0.526	0.526	0.545	0.545	0.564	0.564	0.583	0.583
IESW015	0.013	0.013	0.014	0.014	0.015	0.015	0.017	0.017	0.019	0.019
IESW016	0.785	0.785	0.797	0.797	0.808	0.808	0.819	0.819	0.829	0.829
IESW018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW020	0.211	0.211	0.219	0.219	0.226	0.226	0.233	0.233	0.239	0.239

ENTITY_ID	SP021	SP022	SP023	SP024	SP025	SP026	SP027	SP028	SP029	SP030
Start Date	May-90	Oct-90	May-91	Oct-91	May-92	Oct-92	May-93	Oct-93	May-94	Oct-94
IESW022	0.718	0.718	0.740	0.740	0.763	0.763	0.780	0.780	0.798	0.798
IESW025	0.660	0.660	0.680	0.680	0.700	0.700	0.720	0.720	0.740	0.740
IESW027	0.276	0.276	0.292	0.292	0.307	0.307	0.318	0.318	0.328	0.328
IESW028	0.648	0.648	0.681	0.681	0.714	0.714	0.731	0.731	0.748	0.748
IESW029	0.204	0.204	0.222	0.222	0.240	0.240	0.256	0.256	0.272	0.272
IESW030	0.733	0.733	0.767	0.767	0.801	0.801	0.823	0.823	0.845	0.845
IESW031	0.991	0.991	0.994	0.994	0.998	0.998	0.998	0.998	0.999	0.999
IESW032	0.690	0.690	0.720	0.720	0.750	0.750	0.768	0.768	0.786	0.786
IESW033	0.994	0.994	0.995	0.995	0.996	0.996	0.997	0.997	0.998	0.998
IESW034	0.721	0.721	0.731	0.731	0.741	0.741	0.753	0.753	0.765	0.765
IESW035	0.243	0.243	0.260	0.260	0.278	0.278	0.294	0.294	0.311	0.311
IESW036	0.137	0.137	0.143	0.143	0.149	0.149	0.155	0.155	0.161	0.161
IESW037	0.533	0.533	0.570	0.570	0.608	0.608	0.686	0.686	0.765	0.765
IESW038	0.230	0.230	0.223	0.223	0.216	0.216	0.223	0.223	0.230	0.230
IESW039	0.254	0.254	0.249	0.249	0.243	0.243	0.249	0.249	0.254	0.254
IESW040	0.873	0.873	0.897	0.897	0.921	0.921	0.937	0.937	0.953	0.953
IESW041	0.161	0.161	0.175	0.175	0.188	0.188	0.201	0.201	0.213	0.213
IESW044	0.137	0.137	0.149	0.149	0.161	0.161	0.189	0.189	0.217	0.217
IESW051	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.008	0.016	0.016
IESW052	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.008	0.016	0.016
IESW053	0.622	0.622	0.626	0.626	0.630	0.630	0.633	0.633	0.636	0.636
IESW054	0.493	0.493	0.501	0.501	0.510	0.510	0.520	0.520	0.530	0.530
IESW055	0.035	0.035	0.038	0.038	0.041	0.041	0.045	0.045	0.048	0.048
IESW056	0.524	0.524	0.530	0.530	0.536	0.536	0.543	0.543	0.550	0.550
IESW057	0.795	0.795	0.804	0.804	0.813	0.813	0.813	0.813	0.813	0.813

ENTITY_ID	SP031	SP032	SP033	SP034	SP035	SP036	SP037	SP038	SP039	SP040
Start Date	May-95	Oct-95	May-96	Oct-96	May-97	Oct-97	May-98	Oct-98	May-99	Oct-99
IEGW501	0.700	0.700	0.705	0.705	0.710	0.710	0.713	0.713	0.717	0.717
IEGW502	0.455	0.455	0.478	0.478	0.500	0.500	0.517	0.517	0.533	0.533
IEGW503	0.950	0.950	0.955	0.955	0.960	0.960	0.965	0.965	0.970	0.970
IEGW504	0.991	0.991	0.991	0.991	0.992	0.992	0.993	0.993	0.993	0.993
IEGW505	0.998	0.998	0.999	0.999	0.999	0.999	0.999	0.999	1.000	1.000
IEGW506	0.934	0.934	0.939	0.939	0.945	0.945	0.950	0.950	0.955	0.955
IEGW507	0.914	0.914	0.917	0.917	0.920	0.920	0.923	0.923	0.927	0.927
IEGW508	0.954	0.954	0.958	0.958	0.963	0.963	0.965	0.965	0.968	0.968
IEGW509	0.874	0.874	0.877	0.877	0.880	0.880	0.883	0.883	0.887	0.887
IEGW600	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW000	0.588	0.588	0.599	0.599	0.610	0.610	0.618	0.618	0.626	0.626
IESW001	0.697	0.697	0.703	0.703	0.710	0.710	0.713	0.713	0.717	0.717
IESW002	0.925	0.925	0.928	0.928	0.930	0.930	0.932	0.932	0.934	0.934
IESW005	0.912	0.912	0.923	0.923	0.934	0.934	0.946	0.946	0.958	0.958
IESW007	0.253	0.253	0.258	0.258	0.263	0.263	0.267	0.267	0.271	0.271
IESW008	0.771	0.771	0.786	0.786	0.800	0.800	0.813	0.813	0.827	0.827
IESW009	0.206	0.206	0.213	0.213	0.220	0.220	0.230	0.230	0.240	0.240
IESW010	0.803	0.803	0.827	0.827	0.850	0.850	0.870	0.870	0.890	0.890
IESW011	0.578	0.578	0.584	0.584	0.590	0.590	0.597	0.597	0.603	0.603
IESW012	0.890	0.890	0.894	0.894	0.897	0.897	0.897	0.897	0.897	0.897
IESW014	0.602	0.602	0.621	0.621	0.640	0.640	0.660	0.660	0.680	0.680
IESW015	0.021	0.021	0.023	0.023	0.025	0.025	0.027	0.027	0.028	0.028
IESW016	0.839	0.839	0.850	0.850	0.860	0.860	0.870	0.870	0.880	0.880
IESW018	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW019	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW020	0.246	0.246	0.253	0.253	0.260	0.260	0.267	0.267	0.273	0.273

ENTITY_ID	SP031	SP032	SP033	SP034	SP035	SP036	SP037	SP038	SP039	SP040
Start Date	May-95	Oct-95	May-96	Oct-96	May-97	Oct-97	May-98	Oct-98	May-99	Oct-99
IESW022	0.815	0.815	0.833	0.833	0.850	0.850	0.867	0.867	0.883	0.883
IESW025	0.760	0.760	0.780	0.780	0.800	0.800	0.820	0.820	0.840	0.840
IESW027	0.339	0.339	0.349	0.349	0.360	0.360	0.367	0.367	0.373	0.373
IESW028	0.766	0.766	0.783	0.783	0.800	0.800	0.813	0.813	0.827	0.827
IESW029	0.288	0.288	0.304	0.304	0.320	0.320	0.353	0.353	0.387	0.387
IESW030	0.866	0.866	0.888	0.888	0.910	0.910	0.927	0.927	0.943	0.943
IESW031	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IESW032	0.804	0.804	0.822	0.822	0.840	0.840	0.860	0.860	0.880	0.880
IESW033	0.998	0.998	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000
IESW034	0.776	0.776	0.788	0.788	0.800	0.800	0.810	0.810	0.820	0.820
IESW035	0.327	0.327	0.344	0.344	0.360	0.360	0.377	0.377	0.393	0.393
IESW036	0.168	0.168	0.174	0.174	0.180	0.180	0.185	0.185	0.190	0.190
IESW037	0.843	0.843	0.922	0.922	1.000	1.000	1.000	1.000	1.000	1.000
IESW038	0.237	0.237	0.244	0.244	0.251	0.251	0.251	0.251	0.251	0.251
IESW039	0.259	0.259	0.265	0.265	0.270	0.270	0.270	0.270	0.270	0.270
IESW040	0.969	0.969	0.984	0.984	1.000	1.000	1.000	1.000	1.000	1.000
IESW041	0.225	0.225	0.238	0.238	0.250	0.250	0.262	0.262	0.273	0.273
IESW044	0.244	0.244	0.272	0.272	0.300	0.300	0.323	0.323	0.347	0.347
IESW051	0.024	0.024	0.032	0.032	0.040	0.040	0.050	0.050	0.060	0.060
IESW052	0.024	0.024	0.032	0.032	0.040	0.040	0.050	0.050	0.060	0.060
IESW053	0.639	0.639	0.642	0.642	0.645	0.645	0.650	0.650	0.655	0.655
IESW054	0.540	0.540	0.550	0.550	0.560	0.560	0.569	0.569	0.579	0.579
IESW055	0.052	0.052	0.056	0.056	0.059	0.059	0.064	0.064	0.068	0.068
IESW056	0.557	0.557	0.564	0.564	0.571	0.571	0.575	0.575	0.580	0.580
IESW057	0.813	0.813	0.813	0.813	0.813	0.813	0.813	0.813	0.813	0.813

ENTITY_ID	SP041	SP042	SP043	SP044
Start Date	May-00	Oct-00	May-01	Oct-01
IEGW501	0.720	0.720	0.723	0.723
IEGW502	0.550	0.550	0.567	0.567
IEGW503	0.975	0.975	0.980	0.980
IEGW504	0.994	0.994	0.995	0.995
IEGW505	1.000	1.000	1.000	1.000
IEGW506	0.960	0.960	0.965	0.965
IEGW507	0.930	0.930	0.933	0.933
IEGW508	0.970	0.970	0.972	0.972
IEGW509	0.890	0.890	0.893	0.893
IEGW600	1.000	1.000	1.000	1.000
IESW000	0.634	0.634	0.642	0.642
IESW001	0.720	0.720	0.723	0.723
IESW002	0.936	0.936	0.938	0.938
IESW005	0.970	0.970	0.982	0.982
IESW007	0.276	0.276	0.280	0.280
IESW008	0.840	0.840	0.853	0.853
IESW009	0.250	0.250	0.260	0.260
IESW010	0.910	0.910	0.930	0.930
IESW011	0.610	0.610	0.617	0.617
IESW012	0.897	0.897	0.897	0.897
IESW014	0.700	0.700	0.720	0.720
IESW015	0.030	0.030	0.032	0.032
IESW016	0.890	0.890	0.900	0.900
IESW018	1.000	1.000	1.000	1.000
IESW019	1.000	1.000	1.000	1.000
IESW020	0.280	0.280	0.287	0.287

ENTITY_ID	SP041	SP042	SP043	SP044
Start Date	May-00	Oct-00	May-01	Oct-01
IESW022	0.900	0.900	0.917	0.917
IESW025	0.860	0.860	0.880	0.880
IESW027	0.380	0.380	0.387	0.387
IESW028	0.840	0.840	0.853	0.853
IESW029	0.420	0.420	0.453	0.453
IESW030	0.960	0.960	0.977	0.977
IESW031	1.000	1.000	1.000	1.000
IESW032	0.900	0.900	0.920	0.920
IESW033	1.000	1.000	1.000	1.000
IESW034	0.830	0.830	0.840	0.840
IESW035	0.410	0.410	0.427	0.427
IESW036	0.195	0.195	0.200	0.200
IESW037	1.000	1.000	1.000	1.000
IESW038	0.251	0.251	0.251	0.251
IESW039	0.270	0.270	0.270	0.270
IESW040	1.000	1.000	1.000	1.000
IESW041	0.285	0.285	0.297	0.297
IESW044	0.370	0.370	0.393	0.393
IESW051	0.070	0.070	0.080	0.080
IESW052	0.070	0.070	0.080	0.080
IESW053	0.660	0.660	0.665	0.665
IESW054	0.588	0.588	0.597	0.597
IESW055	0.072	0.072	0.077	0.077
IESW056	0.584	0.584	0.589	0.589
IESW057	0.813	0.813	0.813	0.813