



5-4617-01-P1

**RIGHT-OF-WAY ACQUISITION AND UTILITY
ADJUSTMENT PROCESS DURATION INFORMATION TOOL
(RUDI) USER GUIDE**

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*Project 5-4617-01: Implementation of Right-of-Way Acquisition and
Utility Adjustment Process Duration Information Tool*

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Preface

Ever since right of way acquisition has been an organized business activity in Texas, involved and affected parties both sides of the R/W line have asked the question “How long does it take to acquire right of way? And, “When will this new highway be completed?” For over 40 years there has not been a reasonable answer to these questions. Predicting the duration of R/W acquisition processes has historically been a problematic issue without a definitive and reliable means of forecasting the successful delivery of clear right of way for highway construction. The Texas Department of Transportation’s inability to consistently predict the completion of this activity causes project delays, cost overruns and negative economic impact to commerce in general.

Knowing of these negative economic repercussions, numerous investigations, process reviews and retooling efforts have been conducted in an attempt to understand and streamline R/W process durations and address unrealistic letting dates. However, none of these efforts produced a framework and tool that could suggest a date of R/W delivery.

Then early in 2003 at the prompting of John Campbell, ROW Division Director, and under the direction of the Research and Technology Implementation Office, a research project was authorized and commissioned to research delays in right of way and utility processes. The Center for Transportation Research at the University of Texas at Austin has scientifically measured right of way and utility historical data and developed a tool to assist the right of way practitioner when providing an advance indication of R/W delivery for construction.

This tool is called the “Right of Way and Utility Adjustment Duration Information System” (RUDI). It is an innovative tool that reviews a historical data directory to make intelligent predictions of time to acquire R/W and adjust utilities. RUDI is the first functional model of this type of decision assistance tool. RUDI is believed to be a wise first step toward providing a knowledgeable advisory of R/W project completion thereby supporting the mission of TxDOT to work cooperatively to provide safe, effective and efficient movement of people and goods. We trust this tool will be a benefit to your operations.

Larry Black

District Right of Way Administrator
Amarillo District Office
Texas Department of Transportation

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Chapter I: Introduction to RUDI

Part 1: Introducing RUDI

- **Definition**

RUDI is a **R**ight of Way Acquisition and **U**tility Adjustment Process **D**uration **I**nformation Tool.

- **Purpose**

RUDI was developed to assist project planning by supporting estimates of Right-of-Way (R/W) and utility adjustment durations for new TxDOT projects and by validating assumptions on existing projects.

- **Benefits**

RUDI is quick and easy to use. It provides a historical basis for R/W acquisition and utility adjustment duration estimates as well as supporting users' judgment for decision making about duration estimates.

Part 2: Getting Started

RUDI runs within the Microsoft Excel platform. In order to properly run RUDI, the user should set Excel to enable macros as a preparation step. If the user's computer is set to "enable macros," one will see RUDI's main interface page immediately after clicking on the file. However, if the user's computer is not set to "enable macros," the computer will give a security warning and give notice to enable or disable macros, as illustrated in Figure 1.1 below. The user should enable macros.

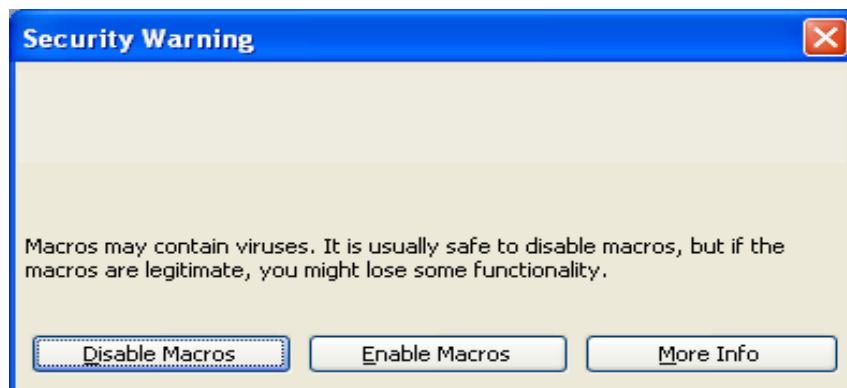


Figure 1.1 Dialog Box for Enabling Macros

Part 3: Navigating RUDI

RUDI consists of six components, namely: advisory data (both R/W acquisition and Utility adjustment durations), a project duration record form, an integrated process map, a key process milestone form, and the RUDI user guide. The user can directly access these components on the RUDI main interface page. There are six primary buttons on this screen corresponding to the main components. In addition, there are two additional buttons. The one on the bottom right hand corner allows the user to exit the system and the other one beside it provides information about the research. The RUDI main interface (Figure 1.2) is illustrated below.

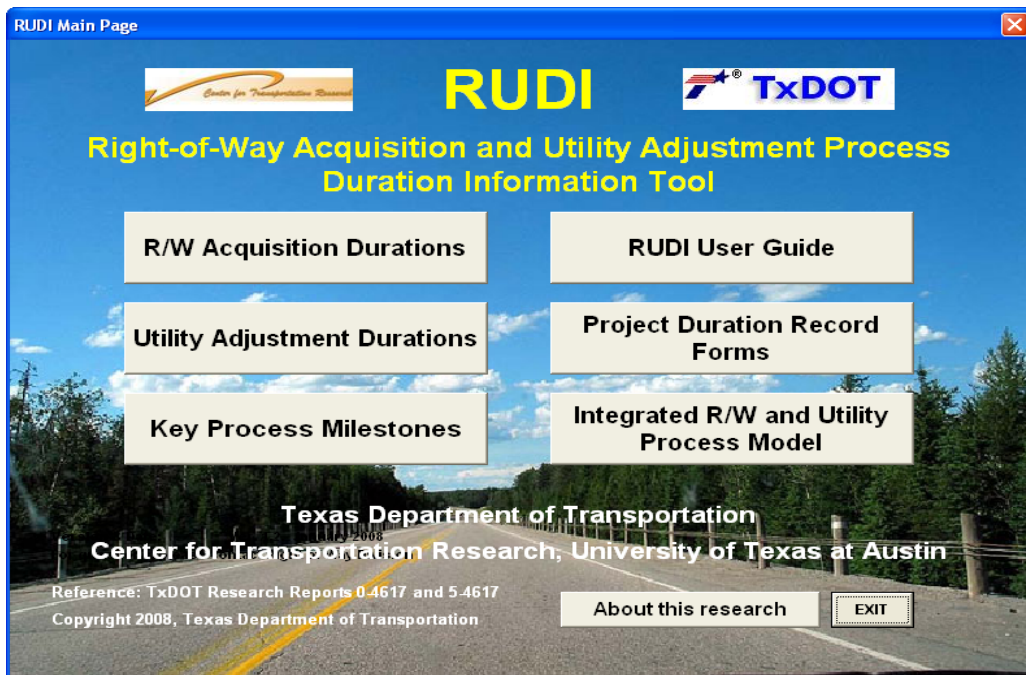


Figure 1.2 RUDI Main Interface

- **R/W Acquisition Durations**

The *R/W Acquisition Durations* button takes the user to the R/W acquisition duration information. The *R/W Acquisition Durations* window displays three durations known as R1, R2, and R3 (Figure 1.3). R1, R2 and R3 correspond to various duration measurements in the R/W acquisition process. The user can use RUDI to find information about each of the durations that need to be estimated.

By clicking on any duration button, the user will have access to another window showing the key factors of the chosen duration. The interface regarding the key factors for the R1 duration is shown below. The user will see the same window when selecting R2 or R3 duration. R1 indicates the duration from the R/W project release to the initial appraisal. R2 represents the duration from the initial appraisal to the possession of parcel. U3 indicates the duration from the R/W project release to possession of parcel. The user can use these key factors of each duration data set as a

source for estimating the desired duration (Figure 1.4). A more detailed explanation and examples are presented in the Chapter II of this user guide.

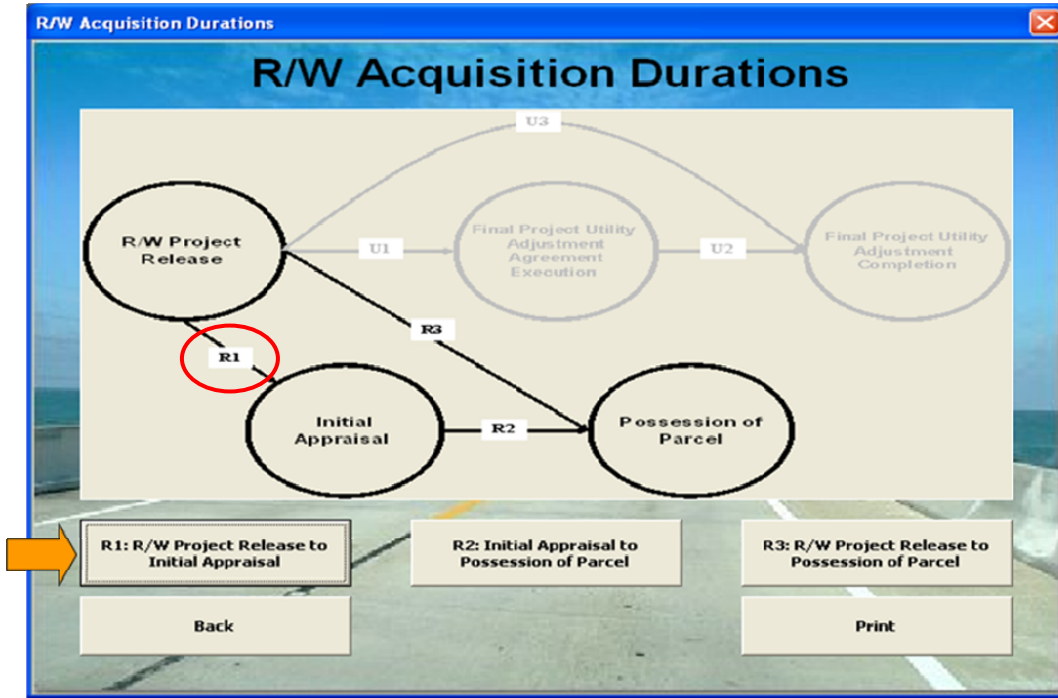


Figure 1.3 R/W Acquisition Process Durations

The screenshot shows a software window titled "R1 Main Information Screen". The main heading is "R1: R/W Project Release to Initial Appraisal". Below the heading is a section titled "Entire Sample (Projects with 10 or more parcels)" with two buttons: "Critical Path Parcels" and "Random Sample". Below this are two sections: "By # of Parcels" with buttons for "Less than 10", "10 or more", "30 or less", and "More than 30"; and "By Location Type" with buttons for "Urban" and "Rural". Below these are two more sections: "By District R/W Staff Size" with buttons for "Less than 9 FTEs" and "9 or more FTEs"; and "By District Annual R/W Budget" with buttons for "Less than \$6 million" and "More than \$6 million". At the bottom, there is a "Back" button, a logo for "Center for Transportation Research", and the "TXDOT" logo.

Figure 1.4 R1: R/W Project Release to Initial Appraisal

- **Utility Adjustment Durations**

The *Utility Adjustment Durations* button takes the user to utility adjustment information. The *Utility Adjustment Durations* window is arranged like the R/W acquisition durations screen, as shown in Figure 1.5 below. U1 indicates the duration from the R/W project release to the final project utility adjustment agreement execution. U2 represents the duration from the final project utility adjustment agreement execution to the final project utility adjustment completion. U3 indicates the duration from the R/W project release date to the final project utility adjustment completion.

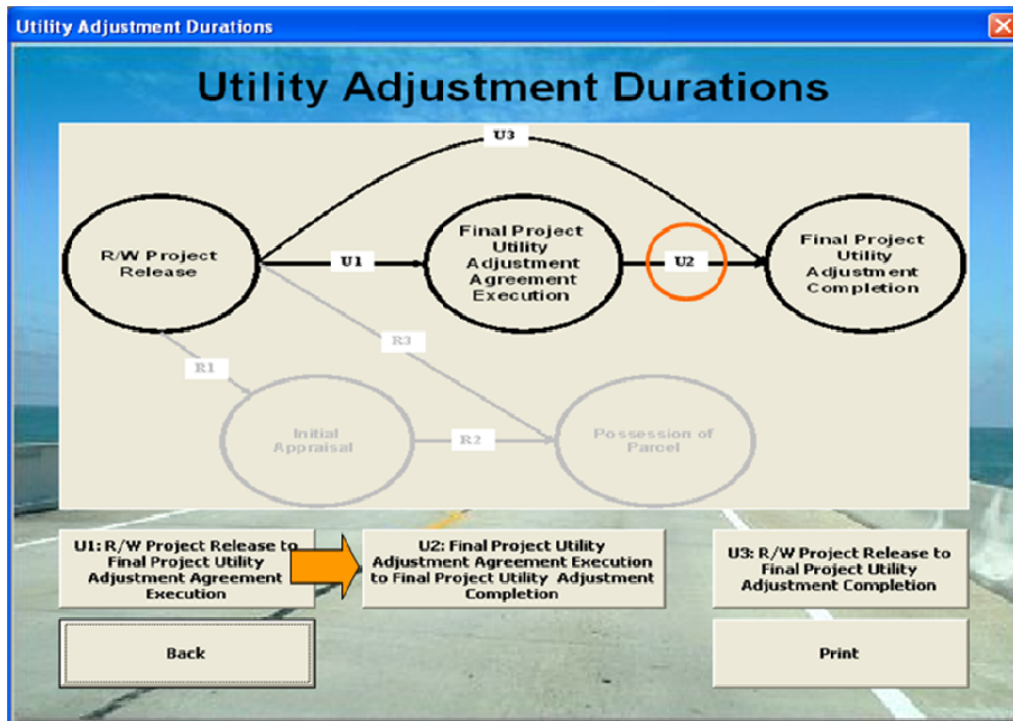


Figure 1.5 Utility Adjustment Durations

RUDI provides information about eight factors characterizing the utility adjustment process. The picture below illustrates the window that is used to estimate the U2 duration (Figure 1.6). The same window is presented for depicting U1 and U3 duration factors. Similarly, users can choose the factors that are relevant to their projects. For example, if the project is not federally funded, the user can click on the “Non-Federally Funded” button to access information of interest (either graphic or statistical format).

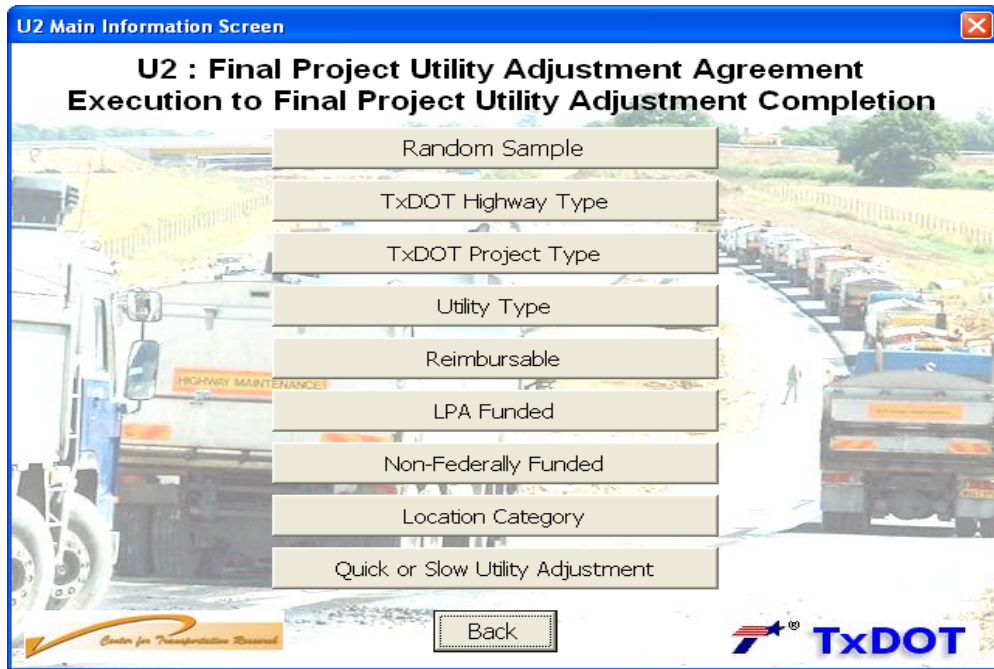


Figure 1.6 U2: Final Project Utility Adjustment Agreement Execution to Final Project Utility Adjustment Completion

- **Project Duration Record Form**

The *Project Duration Record Form* contains a form for manually recording information from RUDI. In general, bringing up and printing out a project record form is the first step in the duration estimate process.

RIGHT OF WAY ACQUISITION PROCESS DURATIONS							
Choices			R1				
			From R/W Project Release To Initial Appraisal				
			Degree of Schedule Urgency		L	M	H
			Degree of Uncertainty		L	M	H
			Percentiles		Duration		
			Lower	Higher	Lower	Higher	
Number of Parcels	Less than 10	<input type="checkbox"/>					
	10 or greater	<input type="checkbox"/>					
	30 or less	<input type="checkbox"/>					
	More than 30	<input type="checkbox"/>					
Location Type	Urban	<input type="checkbox"/>					
	Rural	<input type="checkbox"/>					
Average							
Range							
Recommended duration							

Figure 1.7 Simplified Project Duration Record Form

This form is specifically designed to allow users to describe project characteristics, to write down and to compare durations as they access data within the system (Figure 1.7). The complete Project Record Form can be seen in Appendix B.

- **RUDI Key Process Milestones**

The *Key Process Milestones* button takes the user to a plot of process milestones for R/W acquisition and utility adjustment (Figure 1.8). This milestone information can help the user to understand what each duration means in this tool. Moreover, it is a tool that may serve to visualize the critical path for the R/W and utility adjustment processes. The *Definition* button explains each of the five milestones, as presented in Figure 1.9.

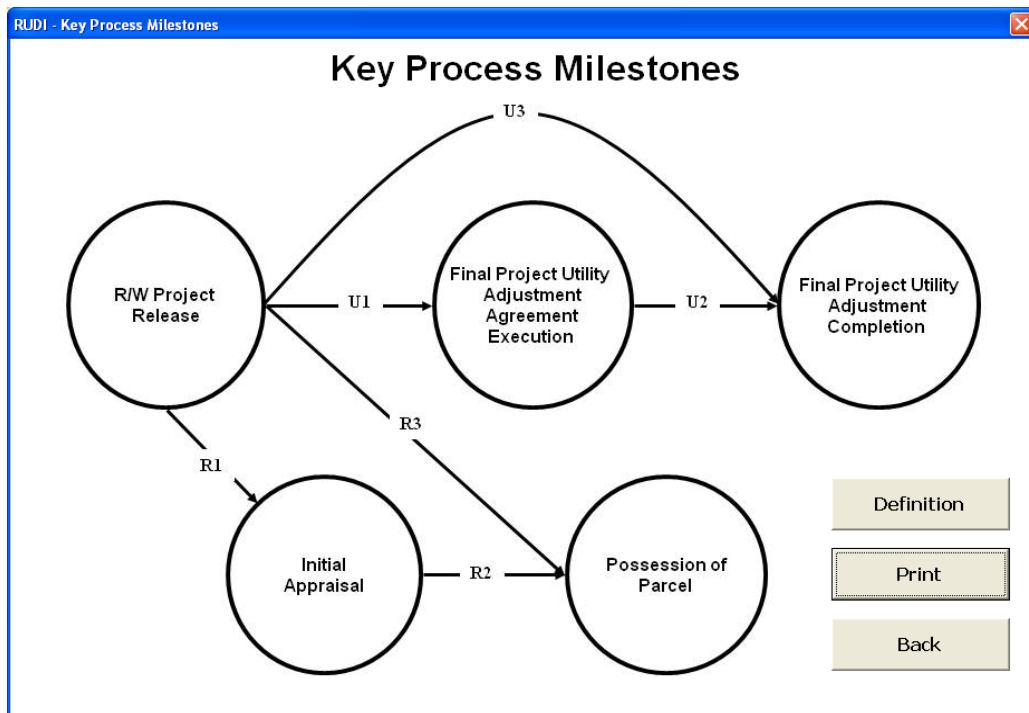


Figure 1.8 Key Process Milestones

Milestone	Definition
Right-of-Way (R/W) Project Release Date	The earliest date that TxDOT can officially begin logging work hours on a R/W or Utility Adjustment Project
Initial Appraisal Date	The earliest appraisal date recorded by the appraiser on the Real Estate Appraisal Report (TxDOT form R/W-A-5 & R/W-A-6)
Possession of Parcel Date	Either the latest date of completion of R/W-N-72 or the latest date of deposit shown on R/W-E-ND
Final Project Utility Adjustment Agreement Execution Date	The date of the submitted utility agreement with TxDOT
Final Project Utility Adjustment Completion Date	The date of completion of the final project utility adjustment in the field

Figure 1.9 Definitions of the Key Process Milestones

- **Integrated R/W acquisition and Utility adjustment process map**

The *Integrated R/W & Utility Process Model* button allows the user to visualize a complete process map of how R/W acquisition and utility adjustment usually occur for Texas Department of Transportation projects. The map also shows the integrated interaction between different involved organizations. The process model is presented in Adobe Acrobat format (pdf).

- **RUDI User Guide**

The *RUDI User Guide* button takes the user to the summarized instructions pertaining to the usage of RUDI.

Chapter II: Using RUDI

Part 1: Major Concepts for RUDI

In this part, the user guide describes the following key RUDI concepts:

- a) The major duration categories
- b) The statistical concepts for using information provided by RUDI
- c) The method for using the percentile range matrix

• Duration Categories

Data concerning R/W acquisition durations are broken down into three subcategories (Figure 2.1):

- a) **R1** represents the duration between the R/W Project Release and the Initial Appraisal.
- b) **R2** represents the duration between the Initial Appraisal and the Possession of Parcel.
- c) **R3** represents the duration between the R/W Project Release and the Possession of Parcel.

Utility adjustment duration data are broken down into three subcategories (Figure 2.1):

- a) **U1** represents the duration between the R/W Project Release and the Final Project Utility Adjustment Agreement Execution.
- b) **U2** represents the duration between the Final Project Utility Adjustment Agreement Execution and the Final Project Utility Adjustment Completion.
- c) **U3** represents the duration between the R/W Project Release and the Final Project Utility Adjustment Completion.

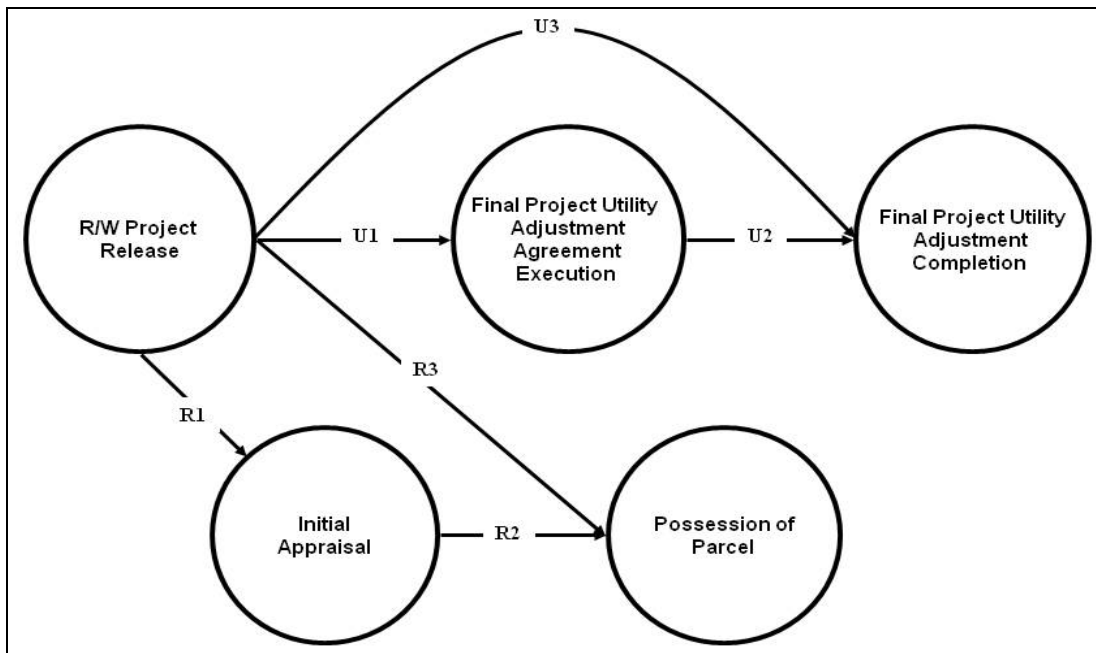


Figure 2.10 Categories of Durations

- **Statistics Concepts**

As mentioned in the Chapter I, RUDI provides statistical information plots and tables based on historical data of past projects of TxDOT. Therefore, the users need to understand basic statistics concepts to interpret RUDI data. The following are fundamental statistics concepts used in RUDI.

a) Percentile

A percentile is a value on a scale of one hundred that indicates the percent of a distribution that is equal to or below it. For example, a certain value at the 70th percentile is equal to or greater than 70 percent of the accumulated values. Therefore, in the example (Figure 2.2) below, the duration X=500 days is the value at the 70th percentile. Seventy percent of the historical durations are lower than or equal to the duration X=500 days.

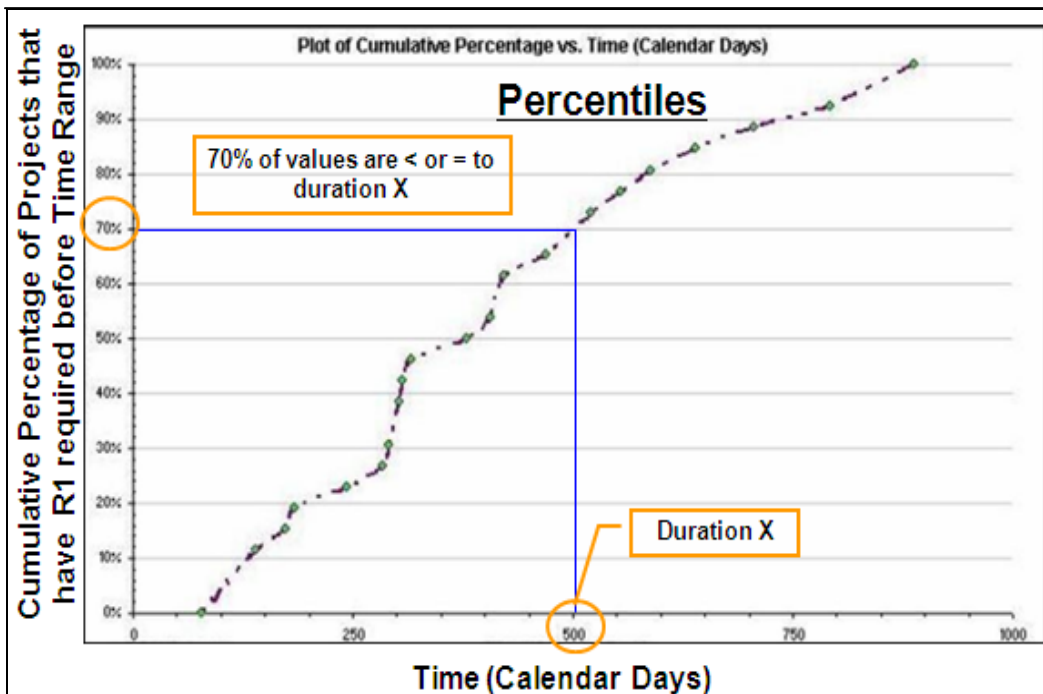


Figure 2.2 Percentile Range A

b) Percentile Range

Is defined as = P90 - P10 where P90 and P10 are the 90th and 10th percentile respectively. In the example below the user could use the values between the 20th and the 70th percentile to estimate a range of duration values. Therefore, for this specific factor, the R1 duration varies from 180 days (20th) to 500 days (70th), as shown in Figure 2.3. The next section provides guidance on how to define Percentile Range values for your project.

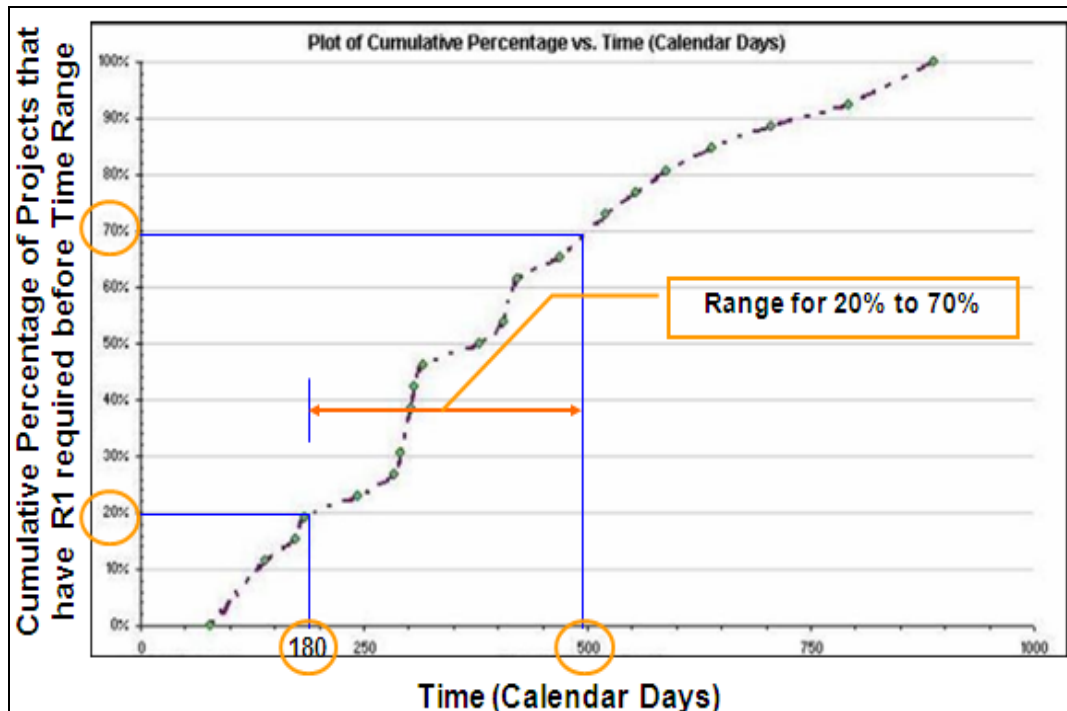


Figure 2.3 Percentile Range B

c) Percentile Range Matrix

A key decision for the user to make in RUDI is to select a percentile range. To help the user, a percentile range matrix is given as a guide. The matrix provides the user with appropriate percentile ranges based on two variables: degree of uncertainty and degree of schedule urgency. Both variables pursue three categories of levels: low, moderate and high. Schedule urgency is determined by the overall highway project schedule condition and other duration factors. As shown in the matrix below (Figure 2.4), the higher the level of urgency, the lower the recommended values of the percentile range. R/W acquisition and utility adjustment durations are influenced by factors that will collectively determine the R/W and utility adjustment level of uncertainty. Therefore, as presented in the matrix, the higher the degree of uncertainty, the higher the values of the percentile range. The selection of urgency and uncertainty is left to the user to determine for the project in question.

Percentile Ranges				
		Degree of Uncertainty		
		Low	Moderate	High
Degree of Schedule Urgency	High	10-30	10-40	10-50
	Moderate	30-50	30-60	30-70
	Low	50-70	50-80	50-90

Figure 2.11 Percentile Range Matrix

Part 2: RUDI Step by Step

This section covers all the procedures needed to estimate durations using RUDI. In addition, interpretation of information provided by RUDI is presented in detail. The user can follow the steps (Figure 2.5) below in order to get information for their duration estimates. An example is used to describe the steps.

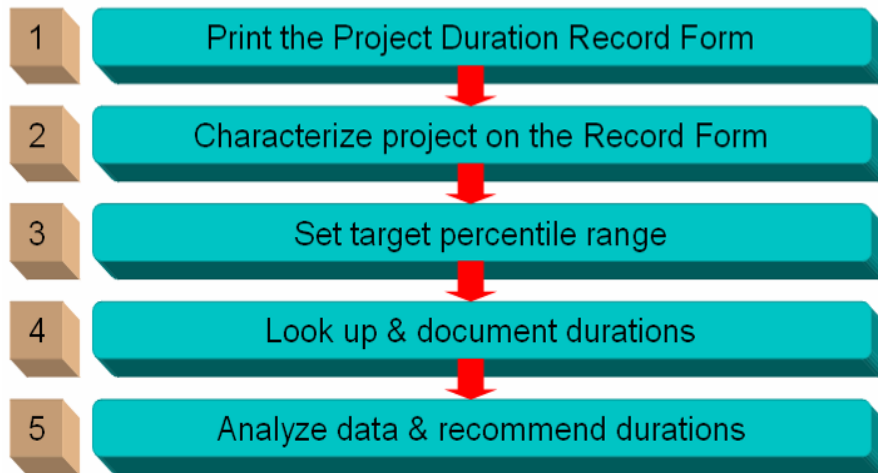


Figure 2.5 RUDI Usage Procedures

- **Example**

The user wants to estimate the R1 duration (between the R/W Project Release and the Possession of Parcel) of an R/W project that has fifteen parcels in a rural location, with a moderate degree of schedule urgency and a low degree of uncertainty.



First, the user needs to print the Project Duration Record Form that allows the user to record information as they use RUDI. The Project Duration Record Form becomes part of the project documentation.



Second, the user needs to characterize the project he/she is preparing for the duration estimation. As addressed in the example's description, characterizing the project means that the user identifies the following items: number of parcels, location type, district R/W staff size, and district annual R/W budget.

The user also needs to judge both the degree of schedule urgency of the project and the degree of uncertainty. This judgment is mostly based on the user’s experience and evaluation of previous TxDOT project performance.

The following data should be recorded on the Record Form (Figure 2.6).

- Number of Parcels: 10 or greater
- Location Type: Rural
- Degree of Schedule Urgency: Moderate (M)
- Degree of Uncertainty: Low (L)

RIGHT OF WAY ACQUISITION PROCESS DURATIONS							
Choices			R1				
			From R/W Project Release To Initial Appraisal				
			Degree of Schedule Urgency		L <input type="checkbox"/>	M <input checked="" type="checkbox"/>	H <input type="checkbox"/>
			Degree of Uncertainty		L <input checked="" type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>
			Percentiles		Duration		
			Lower	Higher	Lower	Higher	
Number of Parcels	Less than 10	<input type="checkbox"/>					
	10 or greater	<input checked="" type="checkbox"/>	30	50			
	30 or less	<input type="checkbox"/>					
	More than 30	<input type="checkbox"/>					
Location Type	Urban	<input type="checkbox"/>					
	Rural	<input checked="" type="checkbox"/>	30	50			
Average							
Range							
Recommended duration							

Figure 2.6 Simplified Project Record Form Showing the Project Characteristics

3 Set target percentile range

Next, the user needs to set a percentile range that might be appropriate for the R1 duration of the project. In this example, the user has selected the level of schedule urgency as “moderate.” In addition, the user decided that the project has a low degree of uncertainty in duration drivers due to a small number of parcels and its location. For this example, the 30th – 50th percentile was selected. This value is determined by the Percentile Range Matrix, which shows that a 30th – 50th percentile range is the most appropriate for project having a moderate degree of schedule urgency and a low degree of uncertainty (Figure 2.7).

Percentile Ranges				
		Degree of Uncertainty		
		Low	Moderate	High
Degree of Schedule Urgency	High	10-30	10-40	10-50
	Moderate	30-50	30-60	30-70
	Low	50-70	50-80	50-90

Figure 2.7 Percentile Range Matrix for the Example

4 Look up & document durations

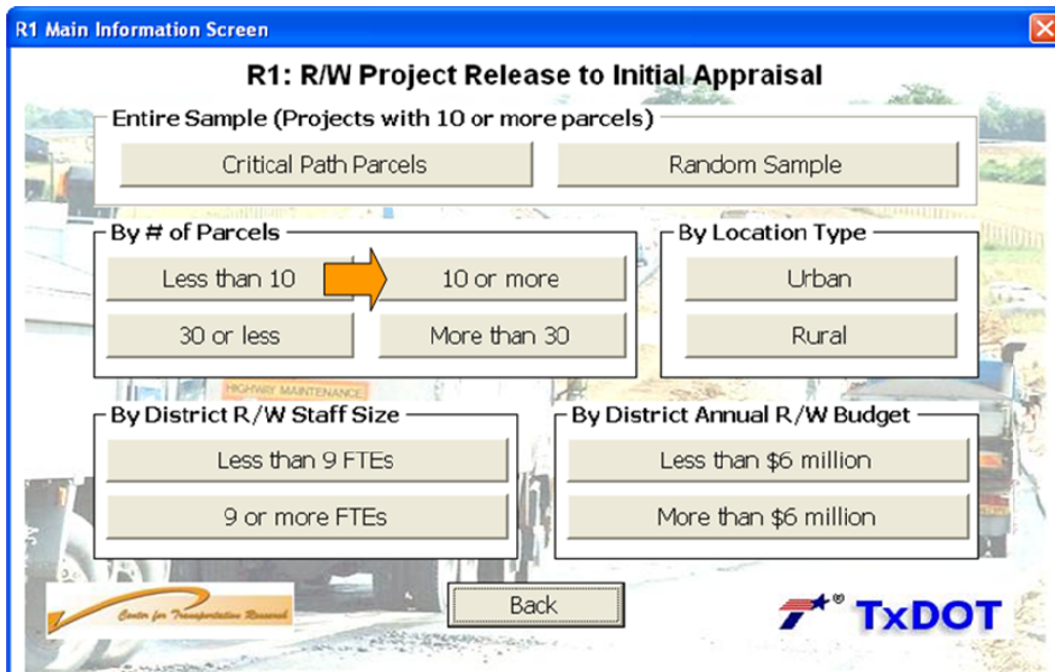


Figure 2.8 R1: R/W Project Release to Initial Appraisal for Parcel Selection

After the selection of the percentile range, the user needs to click the “R1: R/W Project Release to Initial Appraisal” to find more detailed information (Figure 2.8).

The user has access to the duration data, which are presented in two different formats: graphical plots and statistical information (Figure 2.9). Each graph is a plot presenting cumulative percentile

versus time (calendar days) for certain duration. The descriptive statistics describe the plot information in detail. These data are presented in a statistical summary table and a percentile table. The first table shows the mean, the standard deviation, and the minimum and maximum values of historical duration; while the second table shows the percentiles of these data. For R/W data, statistics are listed on the left side of the window for many different conditions. From the plots or tables of statistical information, the user has recorded 166 – 241 days for parcels (Figure 2.9).

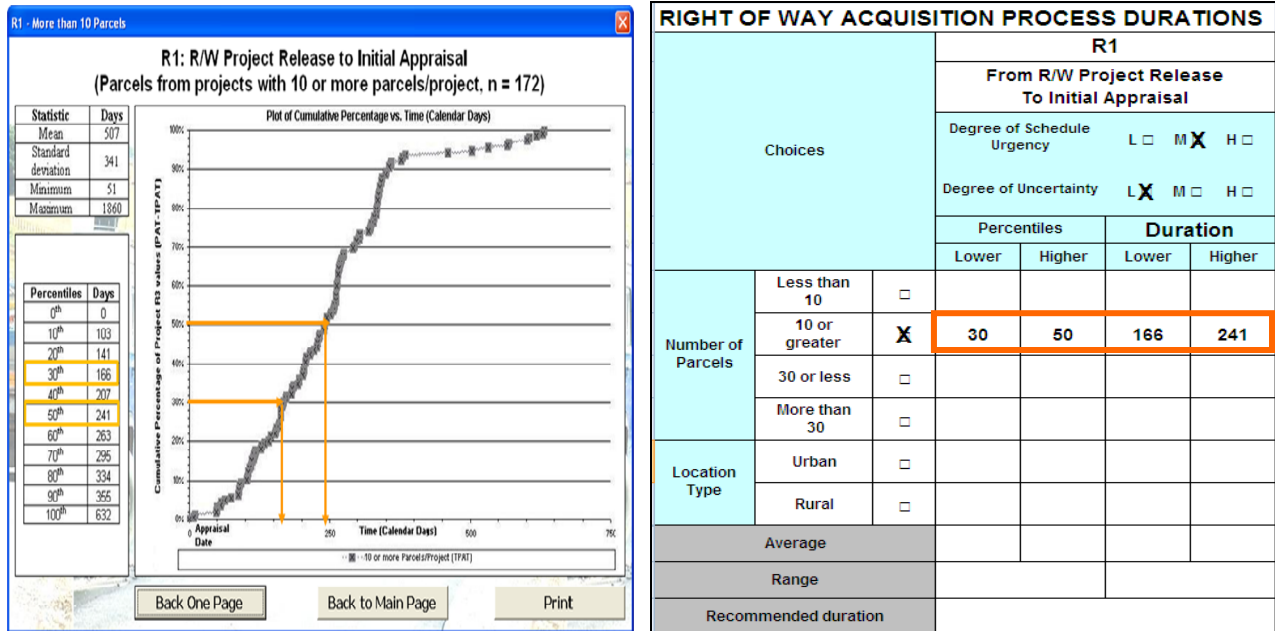


Figure 2.9 Cumulative Distribution Plot and Simplified R/W Duration Record Form

For the second selection criterion (rural), the user needs to access the statistical plot and to find the durations related to the type of location in which the project is located (Figure 2.10).

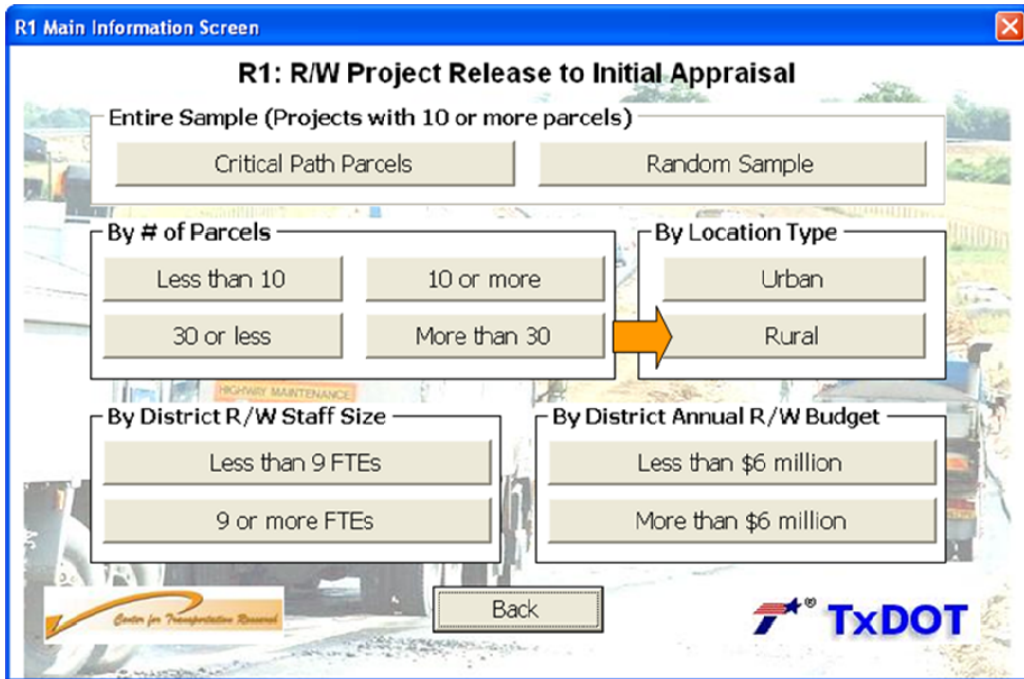


Figure 2.10 R1: R/W Project Release to Initial Appraisal for Location Type Selection

From the plots or tables of statistical information, the user could record 148 – 205 days for rural location type (Figure 2.11).

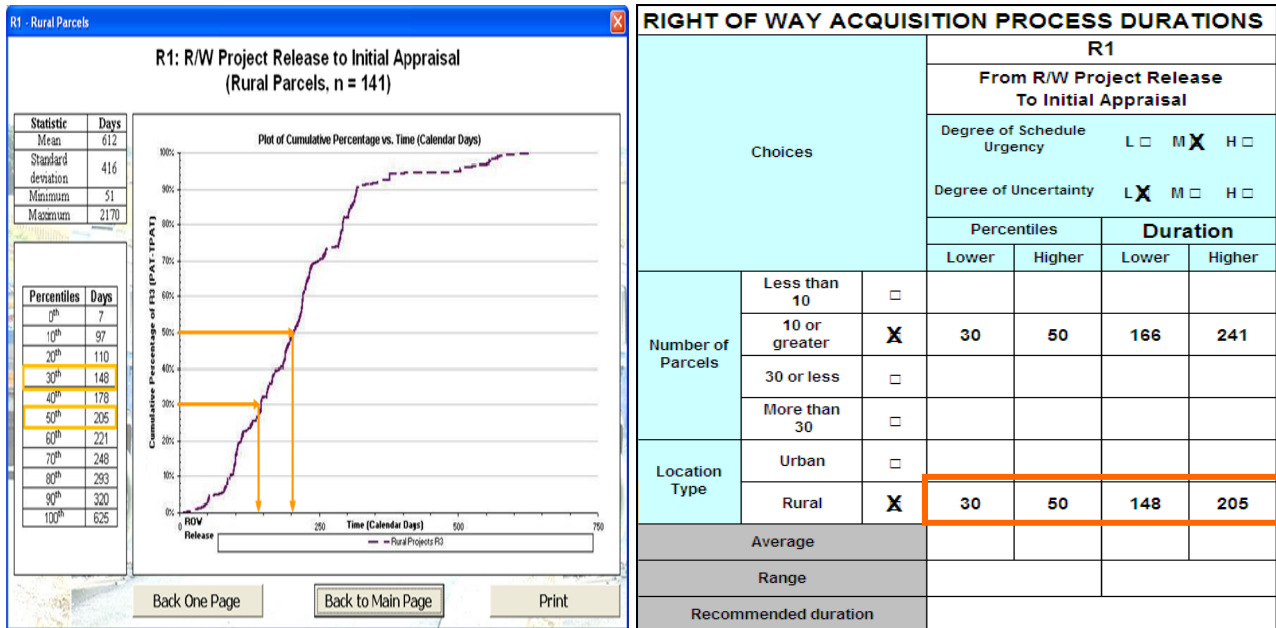


Figure 2.11 Cumulative Distribution Plot and Simplified R/W Duration Record Form

The figure below illustrates how the Duration Record Form should appear after completing all the previous procedures (Figure 2.12). The user needs to calculate averages of percentile ranges and durations for the R1. For this example, as shown in Figure 2.12, the user can get a range of 30th-50th

percentile and obtain an average range of 157 – 223 days for estimating the R1 duration. Finally, the user could select a tight range of 166-205 days for the R1 duration.

RIGHT OF WAY ACQUISITION PROCESS DURATIONS						
Choices			R1			
			From R/W Project Release To Initial Appraisal			
			Degree of Schedule Urgency L <input type="checkbox"/> M <input checked="" type="checkbox"/> H <input type="checkbox"/>			
			Degree of Uncertainty L <input checked="" type="checkbox"/> M <input type="checkbox"/> H <input type="checkbox"/>			
			Percentiles		Duration	
			Lower	Higher	Lower	Higher
Number of Parcels	Less than 10	<input type="checkbox"/>				
	10 or greater	<input checked="" type="checkbox"/>	30	50	166	241
	30 or less	<input type="checkbox"/>				
	More than 30	<input type="checkbox"/>				
Location Type	Urban	<input type="checkbox"/>				
	Rural	<input checked="" type="checkbox"/>	30	50	148	205
Average			30	50	157	223
Range			30-50		166-205	
Recommended duration						

Figure 2.12 Simplified Project Duration Record Form for the Example

5 Analyze data & recommend durations

As a final procedure, the user should select the most reasonable duration within the range defined in Step 4. The selection depends considerably on personal judgment based on knowledge of previous Right of Way projects. In this example, the user could choose either extreme or median values of the range. To determine the recommended duration, the user also needs to consider the factors that mostly affect the intended duration. The user could recommend 196 days for the R1 duration. In this case, researchers added approximately 30 days as a buffer to the minimum estimate because the user was not certain about the value provided by RUDI.

Appendix A: The Project Duration Record Form

R/W ACQUISITION AND UTILITY ADJUSTMENT PROCESS DURATION RECORD FORM

Project CSJ	
Project Title	
Date of Analysis	
Name of Analyst	
Project Description	
Unusual Circumstances (i.e. congested corridor, wetlands, lawyer activity, etc., if known)	
Project Current Status	

PERCENTILE RANGE MATRIX

Percentile Ranges				
		Degree of Uncertainty		
		Low	Moderate	High
Degree of Schedule Urgency	High	10-30	10-40	10-50
	Moderate	30-50	30-60	30-70
	Low	50-70	50-80	50-90

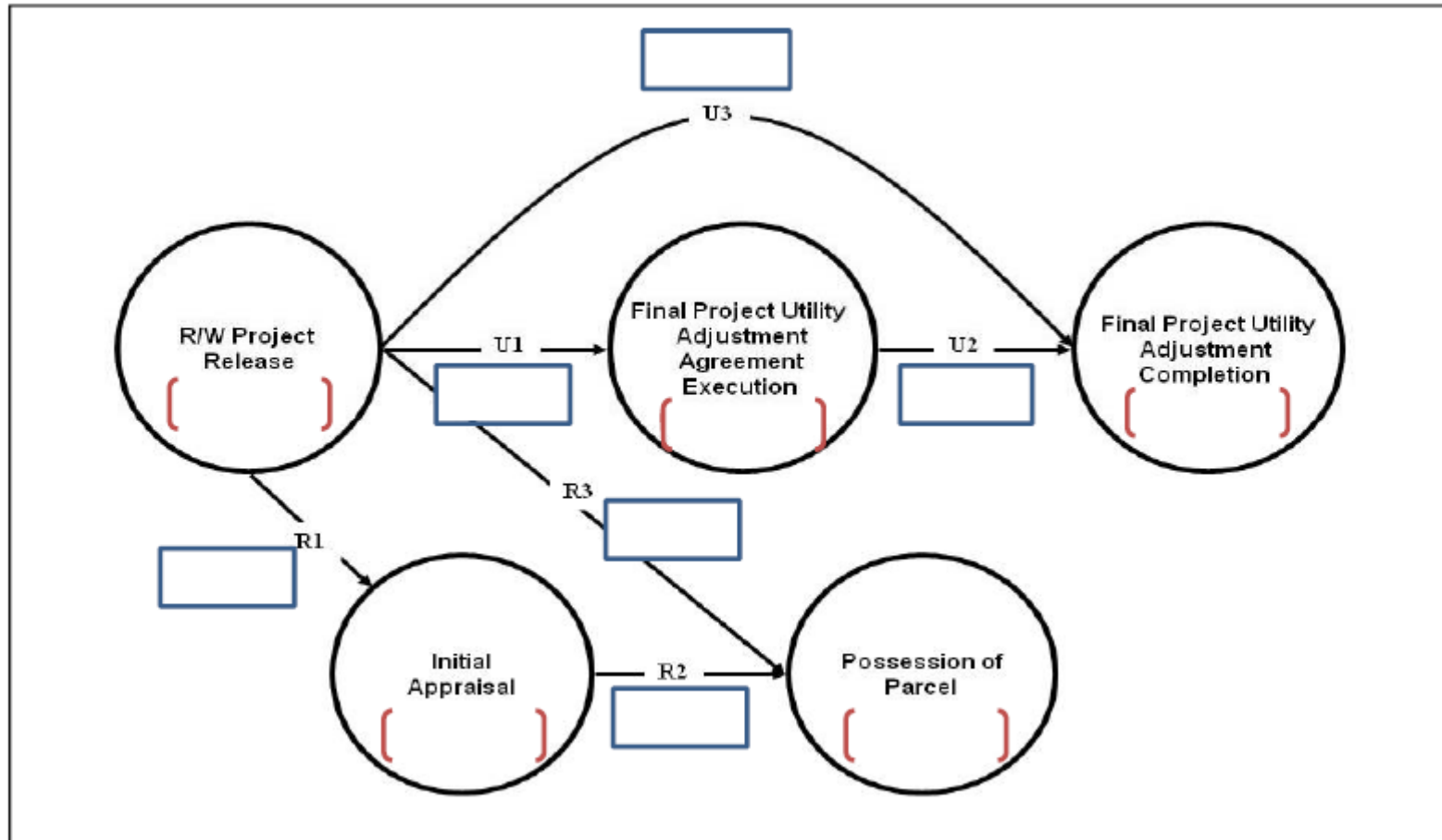
RIGHT OF WAY ACQUISITION PROCESS DURATIONS

Choices			R1				R2				R3						
			From R/W Project Release To Initial Appraisal				From Initial Appraisal To Possession of Parcel				From R/W Project Release To Possession of Parcel						
			Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>
			Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>
			Percentiles		Duration		Percentiles		Duration		Percentiles		Duration				
			Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	
Number of Parcels	Less than 10	<input type="checkbox"/>															
	10 or greater	<input type="checkbox"/>															
	30 or less	<input type="checkbox"/>															
	More than 30	<input type="checkbox"/>															
Location Type	Urban	<input type="checkbox"/>															
	Rural	<input type="checkbox"/>															
District ROW Staff Size	Less than 9 FTEs	<input type="checkbox"/>															
	9 or more FTEs	<input type="checkbox"/>															
District Annual ROW Budget	Less than \$6 million	<input type="checkbox"/>															
	More than \$6 million	<input type="checkbox"/>															
Average																	
Range																	
Recommended duration																	

UTILITY ADJUSTMENT PROCESS DURATIONS

Choices			U1				U2				U3						
			From R/W Project Release To Final Project Utility Adjustment Agreement Execution				From Final Project Utility Adjustment Agreement Execution To Final Project Utility Adjustment Completion				From R/W Project Release To Final Project Utility Adjustment Completion						
			Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Schedule Urgency		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>
			Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>	Degree of Uncertainty		L <input type="checkbox"/>	M <input type="checkbox"/>	H <input type="checkbox"/>
			Percentiles		Duration		Percentiles		Duration		Percentiles		Duration				
			Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	Lower	Higher	
TxDOT Highway Type																	
TxDOT Project Type																	
Utility Type																	
Reimbursable	Reimbursable	<input type="checkbox"/>															
	Non-Reimbursable	<input type="checkbox"/>															
LPA Funding	LPA Funded	<input type="checkbox"/>															
	Non-Funded	<input type="checkbox"/>															
Federal Funding	Federally Funded	<input type="checkbox"/>															
	Non-Federally Funded	<input type="checkbox"/>															
Location Category	Urban	<input type="checkbox"/>															
	Rural	<input type="checkbox"/>															
	Metropolitan	<input type="checkbox"/>															
Utility Adjustment Speed	Quick	<input type="checkbox"/>															
	Slow	<input type="checkbox"/>															
Average																	
Range																	
Recommended duration																	

KEY PROCESS MILESTONES



RECOMMENDED DURATIONS AND MILESTONE DATES

Right Of Way Acquisition	Utility Adjustment
Justifications	

Appendix B: The RUDI Glossary

Terms	Meaning	Usage
Appraisal Approved Date	The Date the District Engineer approves ROW-A-10, Tabulation of Values form	R/W
Appraisal Date	The date recorded by the appraiser on TxDOT Form ROW-A-6, Real Estate Appraisal Report	R/W
Control-Section-Job (CSJ) number	A nine-digit number for projects assigned to all on-system public highways in Texas	R/W
Critical Path Parcel (CPP)	The one parcel in a project that is the final acquired property for the project before construction letting	R/W&Utility
Highway Type	Interstate, US Highway, State Highway, FM/RM	
Full-Time Equivalent (FTE)	An employee who works the standard hours in a time period; FTE is used to quantify manpower in a district	R/W
Local Public Agency (LPA)	Any political subdivision of the State of Texas (State), such as a city, county or other public agency with legal authority to acquire R/W for highways or public roads and to provide adjustment benefits	R/W
Mean	A statistical measurement of the central tendency, or average, of a set of values	R/W&Utility
Median	The midpoint value in a series; the median is not necessarily the same as the mean value	R/W&Utility
Parcel	All property that the State will take on a project. Any single project may contain one or a number of properties that the State needs to acquire; these properties are called parcels. A project will have a CSJ number and one or more parcels associated with the project	R/W&Utility
Percentiles	The percentage of data points (historical durations in the case of RUDI) that are below a particular value	R/W&Utility
Possession of Parcel	By reason of deposit, the state of Texas is now entitled to enter upon and take possession of said property based on Notice of Deposit	R/W
Possession of Parcel Date	The date of completion of ROW-N-72, Title Company's Closing Statement for negotiated parcels	R/W
Random Sample	A sample selected from a statistical population such that each selected member of the sample has an equal probability of being selected	R/W
Range	In descriptive statistics, the range is the length of the smallest interval which contains all the data. It is calculated by subtracting the smallest observation from the greatest and provides an indication of statistical dispersion	R/W&Utility
Right of Way (R/W)	A general term denoting land, property or interest therein, usually in a strip acquired for or devoted to transportation purposes	R/W

Right of Way Acquisition	Process integral to project development for acquiring land for construction start-up	R/W
Right of Way Release	Highway project release authorized by the ROW Division which allows R/W to be acquired by the districts. This authorization is communicated to the districts by memo, notifying them of R/W project release	R/W
Standard Deviation (SD)	Standard deviation is defined as the positive square root of the variance and is a measure of variability expressed in the same units as the data. The standard deviation is very much like a mean or an "average" of all data deviations from the mean value. In a normal (symmetric and bell-shaped) distribution, about two-thirds of the scores fall between +1 and -1 standard deviations from the mean and the standard deviation is approximately 1/4 of the range	R/W&Utility
Types of Utilities	Cap & Removal Pipeline, Extend Casing, High Pressure Gas, Irrigation Pipeline, Liquid Petroleum Line, Low Pressure Gas, Microwave Tower, Overhead Communications, Overhead Power, Sanitary Sewer, Sewer Line, Transmission Pole, Transmission Tower, Underground Communications, Underground Power, UJUA Only, Wastewater, Wastewater Pump Station, Water, Other	Utility
Utility Adjustment	Process that are integral parts of overall project delivery and depends heavily on such other processes as design, environmental clearance, and project prioritization, among others	Utility
BR	Bridge Replacement	Project Type
CNF	Convert Non-Freeway to Freeway	Project Type
HES	Hazard Elimination & Safety	Project Type
INC	Interchange - New or Reconstructed	Project Type
MSC	Miscellaneous	Project Type
NNF	New Location Freeway	Project Type
OV	Overlay	Project Type
RER	Rehabilitation of Existing Road	Project Type
UGN	Upgrade to Standards Non-Freeway	Project Type
UPG	Upgrade to Standards Freeway	Project Type
WF	Widen Freeway	Project Type
WNF	Widen Non-Freeway	Project Type

Appendix C: Trouble Shooting

- **Enable an unsigned macros to run**

To allow unsigned macros to run, the Trust all installed add-ins and templates check box must be selected on the Trusted Publishers tab of the Security dialog box. This option is selected by default. If it is not selected (recommended), Excel allows you to run only macros that have trusted digital signatures.

1. On the **Tools** menu, point to **Macro**, and then click **Security**.
2. On the **Trusted Publishers** tab, select the **Trust all installed add-ins and templates** check box.

- **Error Starting RUDI**

If the user received the following error message, as the user runs macro in the RUDI.xls file,

“The macros in this project are disabled. Please refer to the online help or documentation of the host application to determine how to enable macros.”

The user could use the following steps to resolve the error symptom.

1. If the RUDI.xls file is open, close it.
2. On the **Tools** menu, point to **Macro** and click **Security**.
3. In the **Security** dialog box, click the Security Level tab.
4. Click **Medium** and then click **OK**.
5. Open the RUDI.xls file again. When prompted whether to enable or disable macros, click “Enable Macros”.

References

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Report 0-4617-2, Gibson, G. E., O'Connor, J. T., Chan, R.L., Hedemann, S. E., Chong, W. K., Durations for Acquiring Roadway Right of Way and Assorted Expediting Strategies, Center for Transportation Research.

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