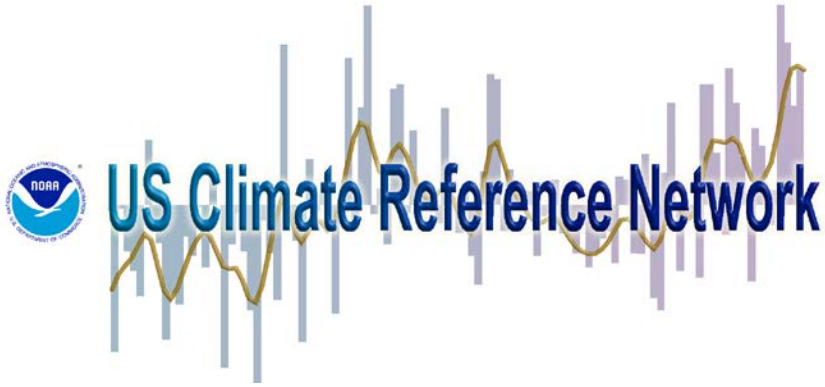
US Climate Reference Network (USCRN)

Handbook for Metadata Receipt and Review



October 12, 2004

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Introduction

The U.S. Climate Reference Network (USCRN) is a network of climate stations whose primary goal is to provide future long-term homogeneous observations of temperature and precipitation that can be coupled to long-term historical observations for the detection and attribution of present and future climate change.

USCRN's data are supported and documented by extensive metadata. The metadata collection begins with documents from the candidate site survey, continues with documents created when a site is selected, and grows with the addition of documents throughout a station's lifetime from its installation through its maintenance history. This document, Handbook for Metadata Receipt and Review, focuses on the receipt and review of documents and photos that derive from installation and maintenance of USCRN stations. These source documents are reviewed for internal consistency and used to verify entries in the on-line station information database. Inconsistencies are forwarded to the field engineers for clarification and correction.

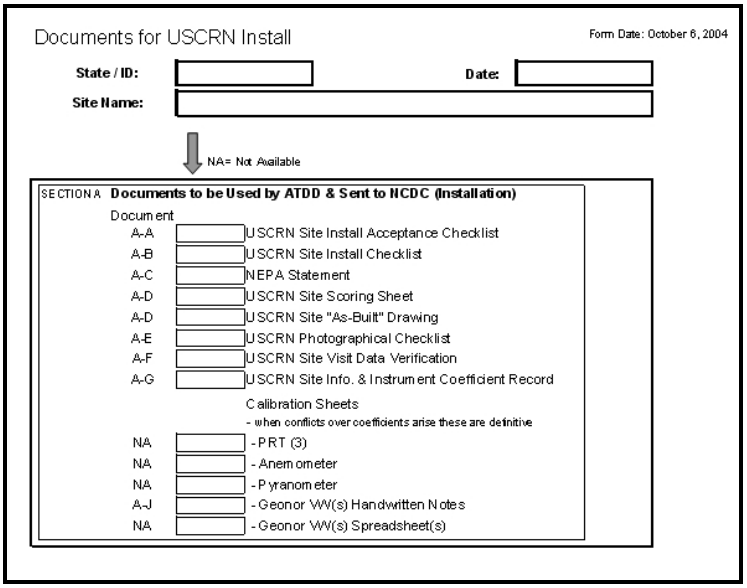
This document is a set of evolving guidelines - it will change over time as automation is increased, station information changes, and new uses for the data are identified.

Section 1.0 Overview of the Metadata Review Process

1. A packet of source documents is received by the CRN team, inventoried, scanned and the image files placed in WSSRD. When used below, the term 'packet' is intended to identify the group of related forms or photos associated with an individual station installation or station annual maintenance visit.

2. A packet is retrieved from the CRN file cabinet located in Room 500 or its scanned files images are located in the CRN WSSRD working directory on the LAN (network).

3. The documents are compared to the list found in the packet's Document Checklist to be sure all documents on the list are available for review. Note: The characters adjacent to the list of documents (see figure below) are ATDD identifiers: the characters "NA" should not be interpreted as "no form available".


Documents for USCRN Install

Form Date: October 6, 2004

State / ID: Date:

Site Name:

NA= Not Available

SECTION A **Documents to be Used by ATDD & Sent to NCDC (Installation)**

Document		
A-A		USCRN Site Install Acceptance Checklist
A-B		USCRN Site Install Checklist
A-C		NEPA Statement
A-D		USCRN Site Scoring Sheet
A-D		USCRN Site "As-Built" Drawing
A-E		USCRN Photographical Checklist
A-F		USCRN Site Visit Data Verification
A-G		USCRN Site Info. & Instrument Coefficient Record
		Calibration Sheets
		- when conflicts over coefficients arise these are definitive
NA		- PRT (3)
NA		- Anemometer
NA		- Pyranometer
A-J		- Geonor WV(s) Handwritten Notes
NA		- Geonor WV(s) Spreadsheet(s)

Figure 1. Example Document Checklist

4. The Verification Field List (see Appendix A) is used to compare certain fields in the document against the on-line station information database entry.

5. Discrepancies, omissions and form changes are noted on the Packet Review Form (see Appendix A).

6. The date in the on-line database's Installation record is compared to the operational date on the CRN Station Report (see Appendix B) AND to the date when station data begins on the CRN Data Observations page for the station.

Section 2.0 Reviewing the Source Documents

Each document in the source document packet must be cross-checked against other documents in the packet. The data previously keyed from them into the on-line station information database is then cross-checked against the source documents.

2.1 Verifying the Fields

The Verification Field List (see Appendix A) lists the fields to be cross-checked and verified, which source documents contain which fields and comments about individual fields' location on the forms, contents and format. Use the list to check each field to be sure the values are the same as or within stated guidelines for each of the listed forms and in the database.

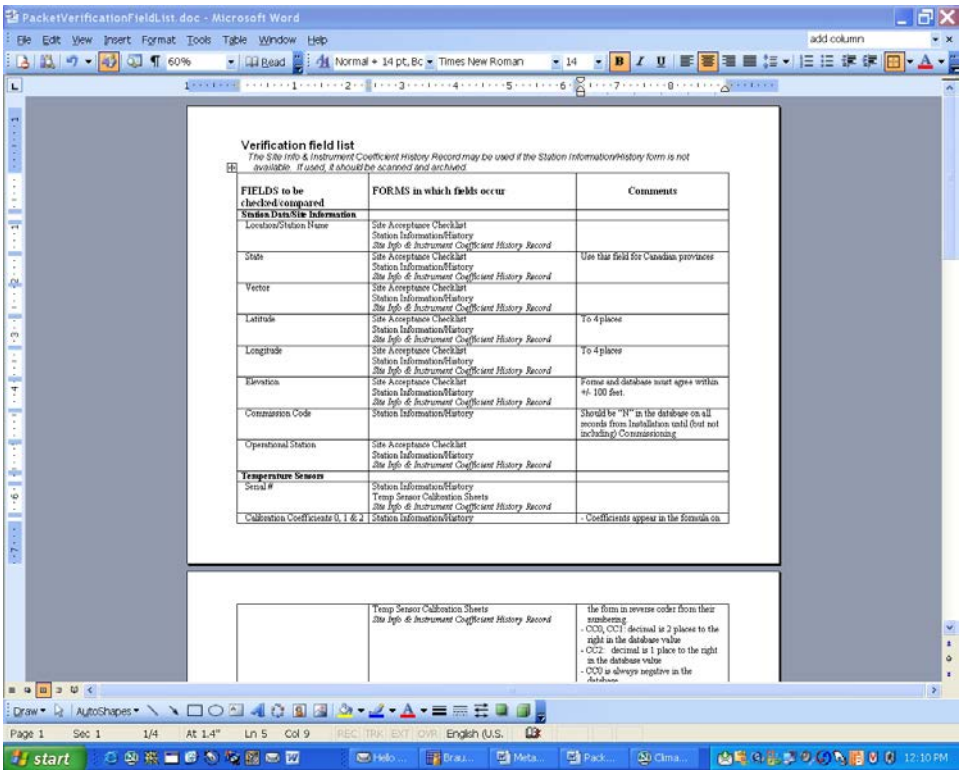


Figure 2. Example Verification Field List

Most of the fields being reviewed are self-explanatory, but it might be helpful to say a little bit about calibration coefficient fields. A coefficient is a number in front of a variable. In the formula $3x+2y = 6$, the numbers 3 and 2 are coefficients. USCRN instruments are measured and adjusted for accuracy (calibrated) in order to ensure the accuracy of our observations. The results of calibration (calibration coefficients) are included in USCRN metadata and are among the fields that are reviewed in the metadata receipt and review process.

Verify the station's start date by checking the date at which data for the station begins. Bring up the station's Hourly Observation page by choosing Data->Observations from the CRN web page. Select the station you wish to see by clicking on the map or selecting the station name from the list and clicking on the list's Go button. The station's period of record appears to the left of the Hourly Ob page.

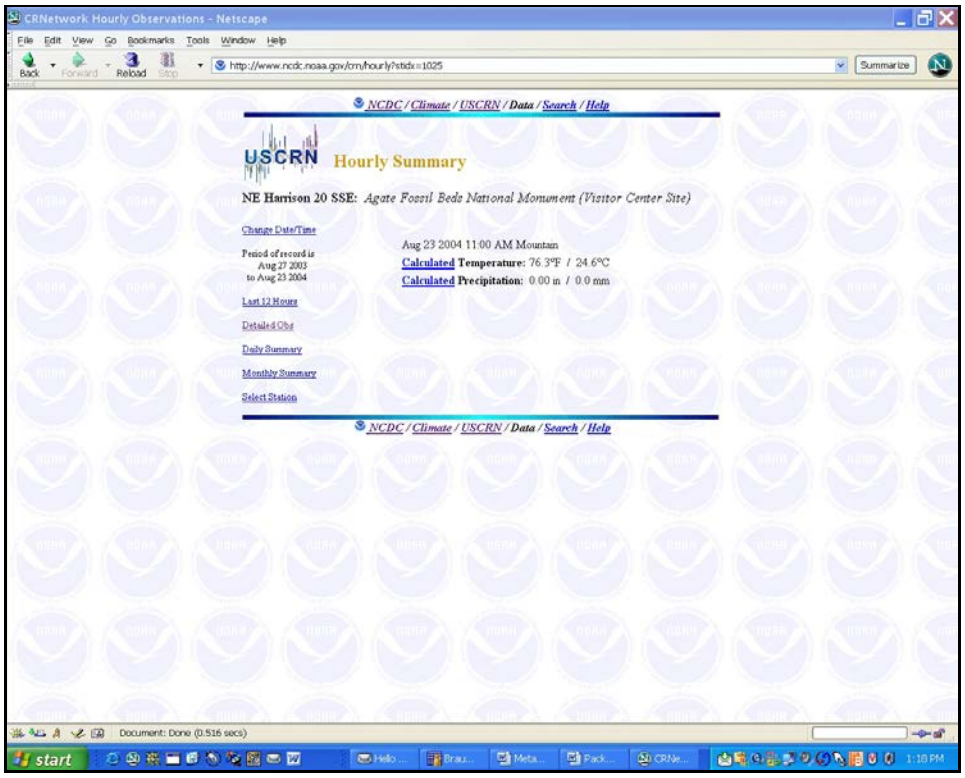


Figure 3. Example Hourly Observation Page

It is not unusual for the installation date on the forms, the date on the on-line database's "Installation" record and the Hourly Observations web page's period of record start date to be different. The engineers may fill out forms a day or two before or after the station begins transmitting data, and sometimes the station transmits unacceptable date for a while. Because of this, care should be taken to note and communicate any differences so they may be resolved or noted as acceptable in the metadata collection.

2.2 Keeping Track of the Review Process

The Packet Review Form (see Appendix A) is provided so that you may record the progress of the review and any discrepancies or questions that arise. Reviewing a CRN metadata packet can be tedious and interruptions are bound to occur. Carefully noting the completion of each step on the Packet Review Form and accurately recording questions makes the review easier and more accurate.

A	B	C	D	E	F
Station Name	Install or AMV?	Are all forms online?	Forms to be annotated	Annotation made	Notes/Questions NCDC/OakRidge

Figure 4. Example Packet Review Form

Section 3.0 Reporting Review Findings

1. Enter your findings on the Field Findings Form (see Appendix A) and save it with a file name that adheres to the following pattern:

State location vector **Install** *or* **AMV** *or* **Maint** *yyyymmdd* **FF.doc**

2. Compose a 'findings' email (see Appendix B, first example). The subject line should always adhere to the following pattern to make it easier to track the emails in their folders:

Metadata Packet Review: *State location vector* **Install** *or* **AMV** *or* **Maint** *yyyymmdd*

Attach the Field Findings form and send the email to ATDD, Oak Ridge, Tennessee, for response, copying NCDC CRN personnel, and blind copying yourself. Currently the addressees are:

To: Gabrielle.Ridenour@noaa.gov *(ATDD)*

Cc: Debra.S.Braun@noaa.gov *(NCDC)*

Freida.Evans@noaa.gov *(NCDC)*

Bcc: *yourself*

3. Once you have received a response and have finished with the packet, compose an email indicating any forms in the packet which have been changed and which therefore must be re-scanned and re-submitted to the archive (see Appendix B, second example). Currently the addressees are:

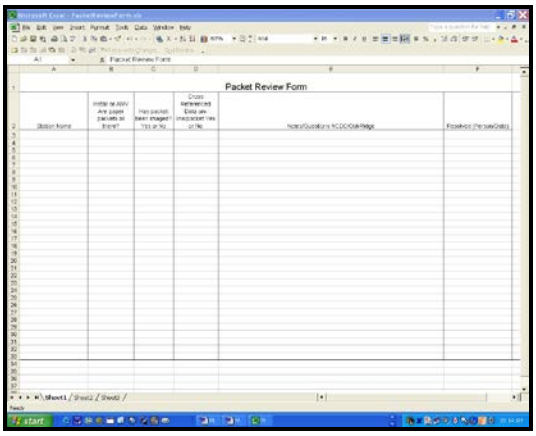
To: Debra.S.Braun@noaa.gov *(NCDC)*

Cc: Freida.Evans@noaa.gov *(NCDC*

Bcc: *yourself*

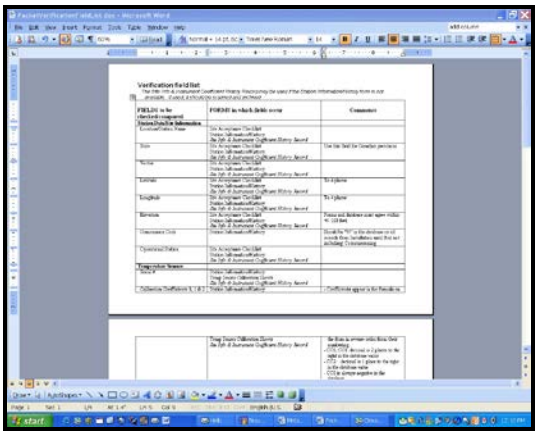
Appendix A Forms Used for Packet Review

The packet review form spreadsheet



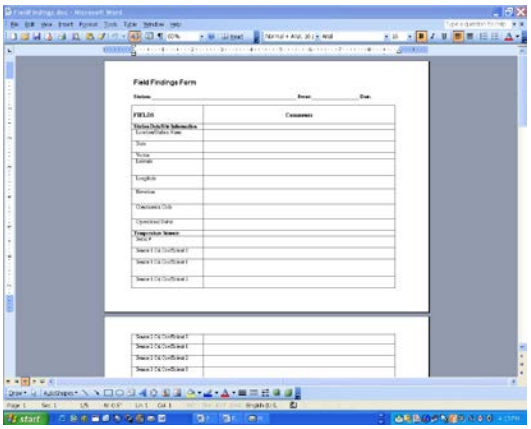
is available on the CRN website.

The verification field list



is available on the CRN website.

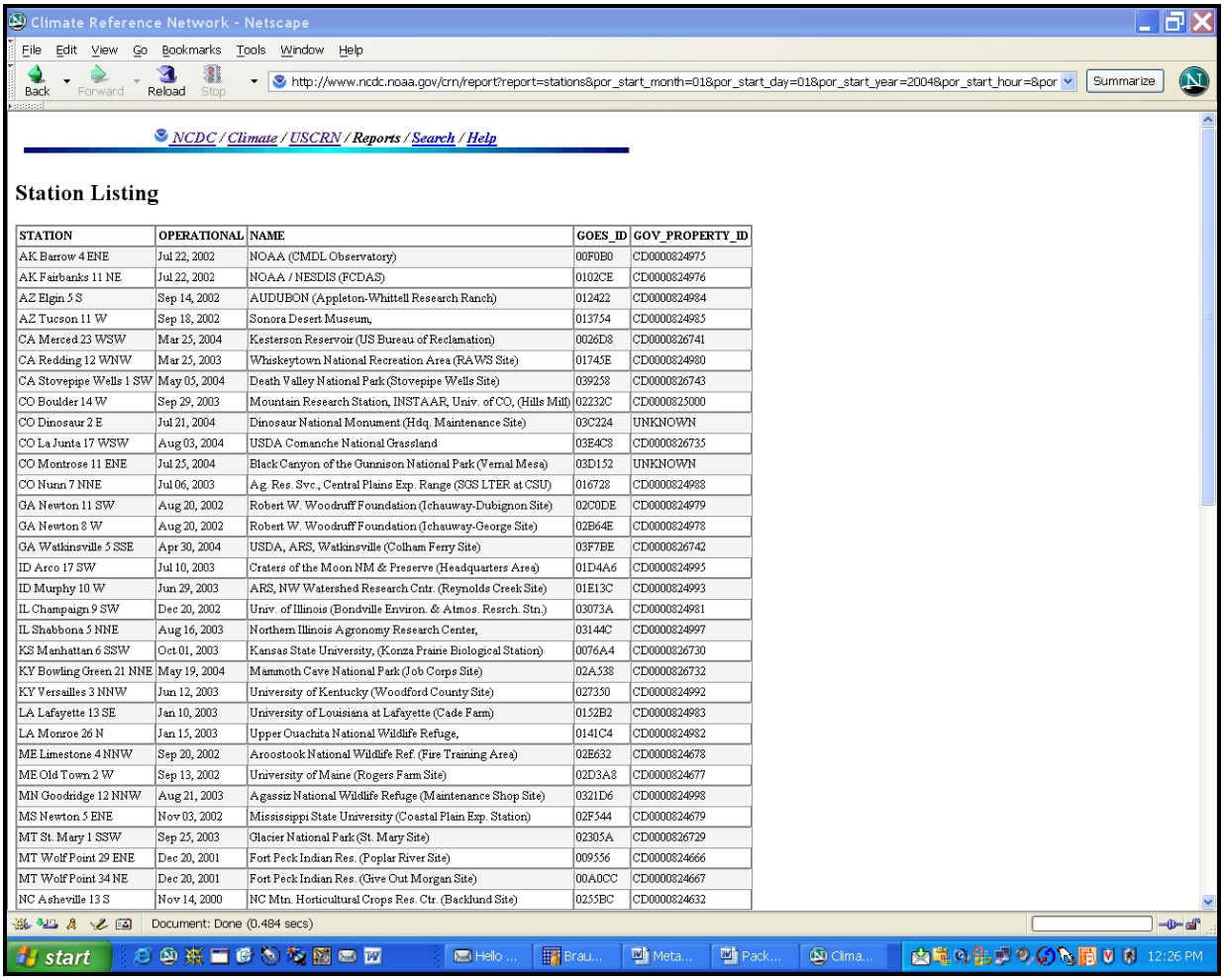
The Field Findings Form:



is available on the CRN website.

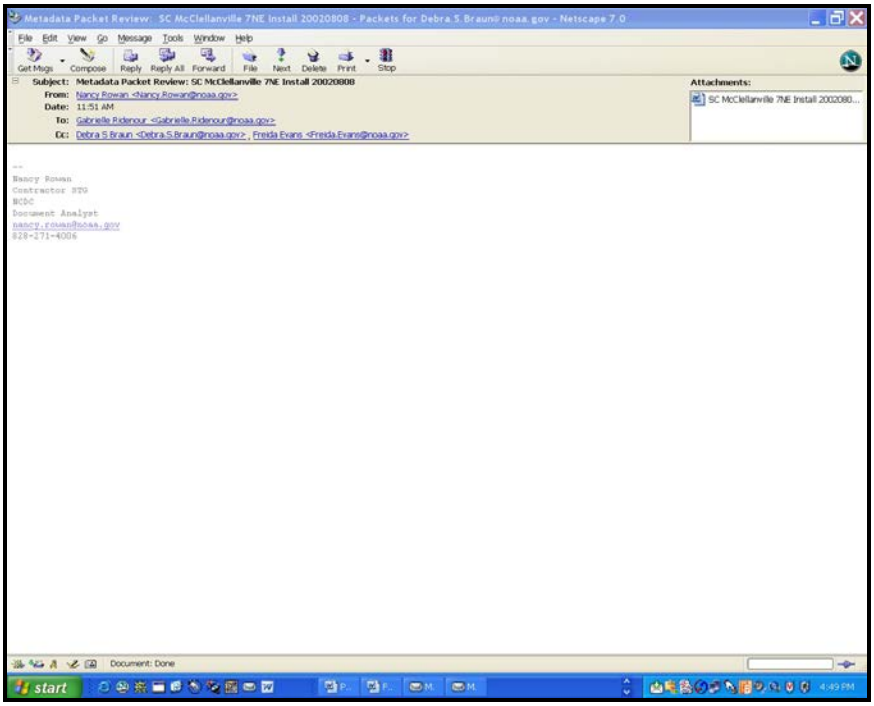
Appendix B CRN station list

The CRN web site has a CRN Station Report, which is automatically updated when new stations are added to the network.



STATION	OPERATIONAL	NAME	GOES_ID	GOV_PROPERTY_ID
AK Barrow 4 ENE	Jul 22, 2002	NOAA (CMDL Observatory)	00F0B0	CD0000824975
AK Fairbanks 11 NE	Jul 22, 2002	NOAA / NESDIS (FCDAS)	0102CE	CD0000824976
AZ Elgin 5 S	Sep 14, 2002	AUDUBON (Appleton-Whittell Research Ranch)	012422	CD0000824984
AZ Tucson 11 W	Sep 18, 2002	Sonora Desert Museum,	013754	CD0000824985
CA Merced 23 WSW	Mar 25, 2004	Kesterson Reservoir (US Bureau of Reclamation)	0026D8	CD0000826741
CA Redding 12 WNW	Mar 25, 2003	Whiskeytown National Recreation Area (RAWS Site)	01745E	CD0000824980
CA Stovepipe Wells 1 SW	May 05, 2004	Death Valley National Park (Stovepipe Wells Site)	039258	CD0000826743
CO Boulder 14 W	Sep 29, 2003	Mountain Research Station, INSTAAR, Univ. of CO, (Hills Mill)	02232C	CD0000825000
CO Dinosaur 2 E	Jul 21, 2004	Dinosaur National Monument (Hdq. Maintenance Site)	03C224	UNKNOWN
CO La Junta 17 WSW	Aug 03, 2004	USDA Comanche National Grassland	03E4C8	CD0000826735
CO Montrose 11 ENE	Jul 25, 2004	Black Canyon of the Gunnison National Park (Vernal Mesa)	03D152	UNKNOWN
CO Nunn 7 NNE	Jul 06, 2003	Ag. Res. Svc., Central Plains Exp. Range (SGS LTER at CSU)	016728	CD0000824988
GA Newton 11 SW	Aug 20, 2002	Robert W. Woodruff Foundation (Ichauway-Dubignon Site)	02C0DE	CD0000824979
GA Newton 8 W	Aug 20, 2002	Robert W. Woodruff Foundation (Ichauway-George Site)	02B64E	CD0000824978
GA Watkinsville 5 SSE	Apr 30, 2004	USDA, ARS, Watkinsville (Colham Ferry Site)	03F7BE	CD0000826742
ID Arco 17 SW	Jul 10, 2003	Craters of the Moon NM & Preserve (Headquarters Area)	01D4A6	CD0000824995
ID Murphy 10 W	Jun 29, 2003	ARS, NW Watershed Research Cntr. (Reynolds Creek Site)	01E13C	CD0000824993
IL Champaign 9 SW	Dec 20, 2002	Univ. of Illinois (Bondville Environ. & Atmos. Resrch. Stn.)	03073A	CD0000824981
IL Shabbona 5 NNE	Aug 16, 2003	Northern Illinois Agronomy Research Center,	03144C	CD0000824997
KS Manhattan 6 SSW	Oct 01, 2003	Kansas State University, (Konza Prairie Biological Station)	0076A4	CD0000826730
KY Bowling Green 21 NNE	May 19, 2004	Mammoth Cave National Park (Job Corps Site)	02A538	CD0000826732
KY Versailles 3 NNW	Jun 12, 2003	University of Kentucky (Woodford County Site)	027350	CD0000824992
LA Lafayette 13 SE	Jan 10, 2003	University of Louisiana at Lafayette (Cade Farm)	0152B2	CD0000824983
LA Monroe 26 N	Jan 15, 2003	Upper Ouachita National Wildlife Refuge,	0141C4	CD0000824982
ME Limestone 4 NNW	Sep 20, 2002	Aroostook National Wildlife Ref. (Fire Training Area)	02E632	CD0000824678
ME Old Town 2 W	Sep 13, 2002	University of Maine (Rogers Farm Site)	02D3A8	CD0000824677
MN Goodridge 12 NNW	Aug 21, 2003	Agassiz National Wildlife Refuge (Maintenance Shop Site)	0321D6	CD0000824998
MS Newton 5 ENE	Nov 03, 2002	Mississippi State University (Coastal Plain Exp. Station)	02F544	CD0000824679
MT St. Mary 1 SSW	Sep 25, 2003	Glacier National Park (St. Mary Site)	02305A	CD0000826729
MT Wolf Point 29 ENE	Dec 20, 2001	Fort Peck Indian Res. (Poplar River Site)	009556	CD0000824666
MT Wolf Point 34 NE	Dec 20, 2001	Fort Peck Indian Res. (Give Out Morgan Site)	00A0CC	CD0000824667
NC Asheville 13 S	Nov 14, 2000	NC Mtn. Horticultural Crops Res. Ctr. (Backlund Site)	0255BC	CD0000824632

Appendix C Sample 'Findings' emails



Subject: Metadata Packet Review: CO Dinosaur 2E Install 20040721 Final
Date: Tue, 05 Oct 2004 14:48:06 -0400
From: "Nancy Rowan" <Nancy.Rowan@noaa.gov>
To: Debra S Braun <Debra.S.Braun@noaa.gov>
CC: Freida Evans <Freida.Evans@noaa.gov>

```
Freida,
Please rescan:  Accept List
                Platform Description Table
                Stn History Info
                Precip Gauge Calib Sheet
                Component List

--
Nancy Rowan
Contractor STG
NCDC
Document Analyst
nancy.rowan@noaa.gov
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Appendix D WSSRD Staging File Names

All file names begin with state, location, vector. Example: ***ME Limestone 4NNW***

Install DocChecklist: Documents for USCRN Install

Install AcceptList : USCRN Site Install Acceptance Checklist

Install Checklist: USCRN Site Install Checklist

Install Issues: USCRN Site Install Issues

Install Component List: USCRN Site Install Component Checklist

Install NEPA Statement: NEPA Statement

Install AsBuilt Drawing: USCRN Site "As-Built" Drawing

Install Photo Checklist: USCRN Photographical Documentation Checklist

Install Data Verif: USCRN Site Visit Data Verification

Install Stn History Info: USCRN Station Database – Station History (Printed & Handwritten)

Install Platform Desc Table: NOAA Platform Description Table

Install Temp Sensor 1 Calib Sheet: Temperature Calibration Sheet (PRT #__) (No title)

Install Temp Sensor 2 Calib Sheet: Temperature Calibration Sheet (PRT #__) (No title)

Install Temp Sensor 3 Calib Sheet: Temperature Calibration Sheet (PRT #__) (No title)

Install Wind Speed Sensor Calib Sheet: Anemometer Information/Calibration Sheet (No title)

Install Solar Rad Sensor Calib Sheet: Solar Radiation Calibration Sheet (KZ#_____) (No title)

Install Precip Gauge 1 Sensor 1 Calib Sheet: Calibration Sheet Precip Gauge 1 Transducer I

Install Precip Gauge 1 Sensor 2 Calib Sheet: Calibration Sheet Precip Gauge 1 Transducer II

Install Precip Gauge 1 Sensor 3 Calib Sheet: Calibration Sheet Precip Gauge 1 Transducer III

Appendix E Metadata Receipt and Review Handbook Change Log

Date	Section and Paragraph Number	Description of Change	Are Redlines Attached?