APPENDIX A
CONSULTATION CORRESPONDENCE

APPENDIX A: CONSULTATION CORRESPONDENCE

The *Endangered Species Act of 1973* (ESA), as amended, and the *National Historic Preservation Act of 1966* (NHPA), as amended, require that Federal agencies consult with applicable Federal and State agencies and groups prior to taking an action that may affect threatened and endangered species, essential fish habitat, or historical and archaeological resources. This Appendix lists the available Ross Project consultation documentation related to these Federal statutes.

Table A.1
Chronology of Consultation Correspondence

Author	Recipient	Date of Letter	ADAMS Accession Number
U.S. Nuclear Regulatory Commission (L. Camper)	Fort Peck Tribal Executive Board	November 19, 2010[1]	ML103160580
U.S. Nuclear Regulatory Commission (L. Camper)	Fort Belknap Community Council	February 9, 2011[2]	ML110400321
Turtle Mountain Band of Chippewa Indians (K. Ferris)	U.S. Nuclear Regulatory Commission (A. Bjornsen)	April 14, 2011	ML111080059
U.S. Nuclear Regulatory Commission (K. Hsueh)	Sisseton-Wahpeton Lakota Tribal Historic Preservation Office (D. Desrosiers)	August 11, 2011[3]	ML112220386
U.S. Nuclear Regulatory Commission (K. Hsueh)	Fish and Wildlife Service U.S. Dept. of the Interior (M. Sattelberg)	August 12, 2011	ML112200151
Apache Tribe of Oklahoma (L. Guy)	U.S. Nuclear Regulatory Commission (A. Bjornsen)	August 19, 2011	ML11336A224
U.S. Nuclear Regulatory Commission (A. Persinko)	Wyoming State Historic Preservation Office (M. Hopkins)	August 19, 2011	ML112150393
U.S. Nuclear Regulatory Commission (A. Persinko)	Advisory Council on Historic Preservation (J. Fowler)	August 19, 2011	ML112150427

Table A.1
Chronology of Consultation Correspondence
(*Continued*)

Author	Recipient	Date of Letter	ADAMS Accession Number
U.S. Dept. of the Interior Fish and Wildlife Service (M. Sattelberg)	U.S. Nuclear Regulatory Commission (K. Hsueh)	September 13, 2011	ML112770035
Advisory Council on Historic Preservation (C. Hall)	U.S. Nuclear Regulatory Commission (A. Persinko)	September 13, 2011	ML112770035
Wyoming Game and Fish Department (J. Emmerich)	U.S. Nuclear Regulatory Commission (A. Bjornsen)	September 22, 2011	ML112660130
U.S. Nuclear Regulatory Commission (L. Camper)	U.S. National Park Service Devils Tower National Monument (D. FireCloud)	December 5, 2011	ML113120356
U.S. Nuclear Regulatory Commission (K. Hsueh)	Strata Energy, Inc. (M. James)	December 6, 2011	ML113200121
Advisory Council on Historic Preservation (C. Vaughn)	U.S. Nuclear Regulatory Commission (A. Persinko)	December 12, 2011	ML113480465
U.S. Nuclear Regulatory Commission (K. Hsueh)	Fort Peck Tribe (D. Youpee)	December 22, 2011[3]	ML113420504
Strata Energy, Inc. (M. James)	U.S. Nuclear Regulatory Commission (K. Hsueh)	January 12, 2012	ML120720266
U.S. Nuclear Regulatory Commission (K. Hsueh)	Advisory Council on Historic Preservation (C. Vaughn)	January 31, 2012	ML113490371
Rosebud Sioux Tribe (R. Eagle Bear)	U.S. Nuclear Regulatory Commission (A. Bjornsen)	February 1, 2012	ML120390551

Table A.1
Chronology of Consultation Correspondence
(*Continued*)

Author	Recipient	Date of Letter	ADAMS Accession Number
Strata Energy, Inc. (R. Knode)	U.S. Nuclear Regulatory Commission (K. Hsueh)	August 31, 2012	ML12248A421
U.S. Nuclear Regulatory Commission (K. Hsueh)	Santee Sioux Tribe of Nebraska (R. Thomas)	September 20, 2012[3]	ML12264A220
WWC Engineering (B. Schiffer)	U.S. Nuclear Regulatory Commission (J. Moore)	October 16, 2012	ML12311A338
U.S. Nuclear Regulatory Commission (K. Hsueh)	Kiowa Indian Tribe (J. Eskew)	November 21, 2012[3]	ML12325A776
Standing Rock Sioux Tribe (W. Young)	Makoche Wowapi (T. Mentz)	November 27, 2013	ML12334A305
Cheyenne River Sioux Tribe (S. Vance)	Makoche Wowapi (T. Mentz)	November 27, 2013	ML12335A218
Rosebud Sioux Tribe (R. Eagle Bear)	Makoche Wowapi (T. Mentz)	November 28, 2013	ML12335A227
Strata Energy, Inc. (R. Knode)	Makoche Wowapi (T. Mentz)	February 15, 2013	ML13063A235
U.S. Nuclear Regulatory Commission (K. Hsueh)	Wyoming State Historic Preservation Office (R. Currit)	March 8, 2013	ML13044A326
U.S. Nuclear Regulatory Commission (K. Hsueh)	Tribal Historic Preservation Officers	March 11, 2013[3]	ML13070A373
U.S. Nuclear Regulatory Commission (L. Camper)	Flandreau-Santee Sioux (A. Reider)	March 22, 2013[4]	ML13085A005

Table A.1
Chronology of Consultation Correspondence
(*Continued*)

Author	Recipient	Date of Letter	ADAMS Accession Number
U.S. Nuclear Regulatory Commission (K. Hsueh)	U.S. National Park Service Devils Tower National Monument (J. Keck)	March 22, 2013	ML13067A198
U.S. Nuclear Regulatory Commission (K. Hsueh)	U.S. Department of the Interior Fish and Wildlife Service (M. Sattelberg)	March 22, 2013	ML13067A194
U.S. Nuclear Regulatory Commission (K. Hsueh)	Advisory Council on Historic Preservation (R. Nelson)	March 22, 2013	ML13067A075
U.S. Nuclear Regulatory Commission (K. Hsueh)	Wyoming State Historic Preservation Office (M. Hopkins)	March 22, 2013	ML13067A173
U.S. Nuclear Regulatory Commission (K. Hsueh)	Wyoming Game and Fish Department (S. Talbott)	March 22, 2013	ML13067A142
Rosebud Sioux Tribe (R. Eagle Bear)	U.S. Nuclear Regulatory Commission (J. Moore)	March 25, 2013	ML13121A295
Wyoming State Historic Preservation Office (R. Currit)	U.S. Nuclear Regulatory Commission (K. Hsueh)	March 28, 2013	ML13101A403
Advisory Council on Historic Preservation (C. Vaughn)	U.S. Nuclear Regulatory Commission (K. Hsueh)	May 3, 2013	ML13196A368
U.S. Department of Interior Fish and Wildlife Service and U.S. National Park Service (R. Stewart)	U.S. Nuclear Regulatory Commission (C. Bladey)	May 8, 2013	ML13144A826

Table A.1
Chronology of Consultation Correspondence
(*Continued*)

Author	Recipient	Date of Letter	ADAMS Accession Number
U.S. Nuclear Regulatory Commission (J. Moore)	Rosebud Sioux Tribe (R. Eagle Bear)	May 10, 2013[5]	ML13137A070
Wyoming Game and Fish Department (M. Konishi)	U.S. Nuclear Regulatory Commission (C. Bladey)	May 10, 2013	ML13137A086
Standing Rock Sioux Tribe (M. Wilson)	U.S. Nuclear Regulatory Commission (C. Bladey)	May 13, 2013	ML13137A055
Northern Arapaho THPO	U.S. Nuclear Regulatory Commission	July 22, 2013	ML13204A158
U.S. Nuclear Regulatory Commission (K. Hsueh)	Advisory Council on Historic Preservation (C. Vaughn)	August 14, 2013	ML13197A139
U.S. Nuclear Regulatory Commission (K. Hsueh)	Blackfeet Tribe (J. Murray)	September 19, 2013[3]	ML13262A186
U.S. Nuclear Regulatory Commission (K. Hsueh)	Advisory Council on Historic Preservation (C. Vaughn)	September 19, 2013	ML13253A212
U.S. Nuclear Regulatory Commission (K. Hsueh)	Wyoming State Historic Preservation Office (R. Currit)	September 20, 2013	ML13241A257
Strata Energy, Inc. (M. Griffin)	U.S. Nuclear Regulatory Commission (K. Hsueh)	September 27, 2013	ML13282A336
Wyoming State Historic Preservation Office (R. Currit)	U.S. Nuclear Regulatory Commission (K. Hsueh)	October 22, 2013	ML13302B421

Table A.1
Chronology of Consultation Correspondence
(*Continued*)

Author	Recipient	Date of Letter	ADAMS Accession Number
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	October 22, 2013[6]	ML13309A116
Advisory Council on Historic Preservation (J. Fowler)	U.S. Nuclear Regulatory Commission (A. Macfarlane)	October 28, 2013	ML13303B046
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	October 29, 2013[6]	ML13309A066
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	November 5, 2013[6]	ML13311A120
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	November 13, 2013[6]	ML14015A455
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	November 20, 2013[6]	ML13325A009
U.S. Nuclear Regulatory Commission (K. Hsueh)	Strata Energy, Inc. (M. Griffin)	November 27, 2013	ML13322B209
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	December 11, 2013[6]	ML13345B320
WWC Engineering (B. Schiffer)	U.S. Nuclear Regulatory Commission (J. Moore)	January 7, 2014	ML14015A445
U.S. Nuclear Regulatory Commission (J. Moore)	Advisory Council on Historic Preservation (J. Eddins)	January 17, 2014[6]	ML14021A081

(1) Similar letters sent to Cheyenne River Sioux Tribe (J. Plenty), Crow Creek Sioux Tribe (L. Thompson, Jr.), Lower Brule Sioux Tribal Council (M. Jandreau), Oglala Sioux Tribal Council (T. Two Bulls), Rosebud Sioux Tribal Council (R. Bordeaux), Santee Sioux Nation (R. Trudell), Standing Rock Sioux Tribe (R. Thunder), Three Affiliated Tribes Business Council (M. Wells), Northern Cheyenne Tribe (L. Spaug), Cheyenne and Arapaho Tribes (D. Flyingman), Arapaho Business Committee (H. Spoonhunter), Crow Tribal Council (C. Eagle), and Eastern Shoshone Tribe (I. Posey).

(2) Similar letters sent to Standing Rock Lakota Tribal Council (C. Murphy), Crow Tribal Council (C. Eagle), Apache Tribe of Oklahoma (H. Kostzuta), Sisseton-Wahpeton Lakota (A. Grey, Sr.), Yankton Lakota Tribe (R. Courneyor), Blackfeet Tribal Business Council (W. Sharp), Crow Creek Sioux Tribal Council (B. Sazue), Lower Brule Sioux Tribal Council (M. Jandreau), Spirit lake Tribal Council (M. Pearson), Oglala Lakota Tribal Council (T. TwoBulls), Shoshone Business Council (I. Posey), Northern Cheyenne Tribal Council (G. Small), Rosebud Sioux Tribal Council (R. Bordeaux), Fort Peck Tribal Executive Board (A. Stafne), Cheyenne and Arapahoe Tribes of Oklahoma (J. Boswell),Turtle Mountain Chippewa Tribal Council (R. Marcellias), Santee Sioux Nation (R. Trudell), Arapaho Business Council (H. Spoonhunter), Three Affiliated Tribes Business Council (M. Levings), Kiowa Indian Tribe of Oklahoma (D. Tofpi), Flandreau Santee Lakota Executive Committee (G. Bouland), Confederated Salish & Kootenai (E. Moran), and Cheyenne River Lakota Tribal Council (J. Plenty).

(3) Similar letters sent to the Tribal Historic Preservation Officers: Fort Peck Tribal Executive Board (D. Youpee), Fort Belknap Community Council (D. Belgard), Standing Rock Lakota Tribal Council (W. Young), Crow Tribal Council (D. Old Horn), Yankton Lakota Tribe (L. Gravatt), Blackfeet Tribal Business Council (J. Murray), Crow Creek Sioux Tribal Council (W. Wells), Lower Brule Sioux Tribal Council (C. Green), Spirit lake Tribal Council (A. Shaw), Oglala Lakota Tribal Council (W. Mesteth), Shoshone Business Council (W. Ferris), Northern Cheyenne Tribal Council (C. Fisher), Rosebud Sioux Tribal Council (R. Eagle Bear), Cheyenne and Arapahoe Tribes of Oklahoma (D. Hamilton, Santee Sioux Nation (L. Ickes), Arapaho Business Council (D. Conrad), Three Affiliated Tribes Business Council (E. Crows Breast), Kiowa Indian Tribe of Oklahoma (J. Eskew), Flandreau Santee Lakota Executive Committee (J. Weston), Confederated Salish & Kootenai (C. Burke), and Cheyenne River Lakota Tribal Council (S. Vance), Sisseton-Wahpeton Lakots (D. Desrosiers).

(4) Similar letters sent to Tribal Chairman: Three Affiliated Tribes (T. Hall), Crow Creek Tribe (B. Sazue), Rosebud Sioux Tribe (C. "Whitey" Scott), Kiowa Indian Tribe of Oklahoma (A. Poppah), Chippewa Cree Tribe (K. Blatt), Standing Rock Sioux Tribe (C. Murphy). Fort Peck Tribes (F. Azure), Confederated Salish & Kootenai Tribe (J. Durglo), Cheyenne River Sioux Tribe (K. Keckler), Eastern Shosone (D. Sinclair), Crow Tribe (D. Old Coyote), Blackfeet Tribe (W. Sharp, Jr.), Spirit Lake Tribe (R. Yankton, Sr.), Northern Cheyenne Tribe (J. Robinson), Fort Belknap Tribe (T. King), Yankton Sioux Tribe (T. Cournoyer, Sr.), Oglala Sioux Tribe (B. Brewer), Cheyenne and Arapaho Tribe (J. Chief-Boswell), Lower Brule Sioux Tribe (M. Jandreau), Santee Sioux Nation (R. Trudell), Northern Arapaho Tribe (D. O'Neal, Sr.), Sisseton-Wahpeton Oyate Tribes (R. Shepherd).

(5) Email was also to: Yankton Lakota Tribe (L. Gravatt), Crow Creek Sioux Tribe (W. Wells), Northern Cheyenne Tribe (C. Fisher), and Santee Sioux Tribe (R. Thomas), Turtle Mountain Band of Chippewa Indians (B. Nadeau and B. Grant), Ethno Tech (D. Schwab), RESPEC (C. Chapman), Strata Energy, Inc. (M. Griffin).

(6) Email was also sent to: U.S. Nuclear Regulatory Commission (E. Monteith), Wyoming State Historic Preservation Office (R. Currit), Wyoming State Historic Preservation Office (M. Hopkins), WWC Engineering (B. Schiffer), Strata Energy, Inc. (M. Griffin), Bureau of Land Management (A. Tratebas), Kiowa Indian Tribe of Oklahoma (J. Eskew), U.S. Nuclear Regulatory Commission (J. Olmstead), Blackfeet Tribe (J. Murray), U.S. Nuclear Regulatory Commission (J. Fringer), Cheyenne and Arapahoe Tribes of Oklahoma (M. Anquoe), Cheyenne River Lakota Tribe (S. Vance), Arapaho Chippewa Cree Tribe (A. Windy Boy), Confederated Salish and Kootenai Tribes (F. Auld), Crow Tribe (H. Two Leggings), Crow Creek Sioux (W. Wells), Flandreau Santee Lakota (J.B. Weston), Fort Belknap (M. Belgarde), Fort Peck (D. "Curley" Youpee), Lower Brule Lakota (C. Green), Northern Cheyenne Tribe (C. Fisher), Oglala Lakota Tribe (M. Mesteth), Rosebud Sioux Tribe (R. Eagle Bear), Santee Sioux Nation (R. Thomas), Shoshone Tribe (W. Ferris); Sisseton-Wahpeton Lakota (D. Desrosiers); Spirit Lake (D. Smith), Standing Rock Lakota (W. Young and T. Clouthier), Three Affiliated Tribes (E. Crows Breast), and Yankton Lakota Tribe (L. Gravatt).

APPENDIX B
PUBLIC-COMMENT RESPONSES

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ABBREVIATIONS/ACRONYMS

ACHP	Advisory Council on Historic Properties
ACL	Alternate Concentration Limit
ADAMS	Agencywide Documents Access and Management System
AEA	Atomic Energy Act of 1954, As Amended
ALARA	As Low As Reasonably Achievable
APE	Area of Potential Effect
AQD	Air Quality Division (Wyoming Department of Environmental Quality)
ASLB	Atomic Safety Licensing Board
BACT	Best Available Control Technology
BLM	U.S. Bureau of Land Management
BMPs	Best Management Practices
CAA	Clean Air Act
CBM	Coal Bed Methane
CBW	Containment Barrier Wall
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPP	Central Processing Plant
CR	County Road
dB	Decibel
dBA	A-weighted Decibel
DFP	Decommissioning Funding Plan
DM	Deep Monitoring Zone or Unit
DP	Decommissioning Plan
DSEIS	Draft Supplemental Environmental Impact Statement
EIS	Environmental Impact Statement
EO	Executive Order
EOR	Enhanced Oil Recovery
EPA	U.S. Environmental Protection Agency
ER	Strata Energy, Inc.'s *Environmental Report*
FSEIS	Final Supplemental Environmental Impact Statement
FONSI	Findings of No Significant Impact
FR	Federal Register
GEIS	Generic Environmental Impact Statement
HAP	Hazardous Air Pollutant
ISR	In-Situ Recovery
IX	Ion Exchange

LQD	Land Quality Division (Wyoming Department of Environmental Quality)
MCLs	Maximum Contaminant Levels
MIT	Mechanical-Integrity Test
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966, As Amended
NOA	Notice of Availability
NOI	Notice of Intent
NPS	U.S. National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSDWUMR	Nebraska-South Dakota-Wyoming Uranium Milling Region
OSHA	Occupational Safety and Health Administration/ U.S. Department of Labor
OZ	Ore Zone
PA	Programmatic Agreement
RAI	Request for Additional Information
RAP	Restoration Action Plan
RFFA	Reasonably Foreseeable Future Action
RO	Reverse Osmosis
ROD	Record of Decision
ROI	Region of Influence
RP	Ross Project
SA	Surficial Aquifer
SDWA	Safe Drinking Water Act
SEIS	Supplemental Environmental Impact Statement
SER	Safety Evaluation Report
SGCN	(Wyoming) Species of Greatest Conservation Need
SM	Shallow Monitoring Zone
SOP	Standard Operating Procedure
SU	Standard Unit (pH)
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids

TENORM	Technologically Enhanced Naturally Occurring Radioactive Material
THPO	Tribal Historic Preservation Office
TLD	Thermo Luminescent Dosimeter
TR	Strata Energy, Inc.'s *Technical Report*
TRG	Target Restoration Goal
TRV	Target Restoration Value
UCL	Upper Control Limit
UIC	Underground Injection Control
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978
U.S.	United States
USDOT	U.S. Department of Transportation
USDW	Underground Source of Drinking Water
USFWS	U.S. Fish and Wildlife Service
WAQSR	Wyoming Air Quality Standards and Regulations
WDEQ	Wyoming Department of Environmental Quality
WGFD	Wyoming Game and Fish Department
WOGCC	Wyoming Oil and Gas Conservation Commission
WQD	Water Quality Division
WSOC	Wyoming Species of Concern
WWDC	Wyoming Water Development Commission
WWUMR	Wyoming West Uranium Milling Region
WYPDES	Wyoming Pollutant Discharge Elimination System

APPENDIX B: PUBLIC-COMMENT RESPONSES

B.1 Overview

On March 29, 2013, the United States (U.S.) Nuclear Regulatory Commission (NRC) staff published a notice in the *Federal Register* (78 FR 19330) requesting public review and comment on the *Draft Environmental Impact Statement (DSEIS) for the Ross In-Situ Recovery (ISR) Project in Crook County, Wyoming*. This SEIS is a *Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities* (NUREG–1910, the "GEIS") (74 FR 65808) in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." The subject of this environmental review is known as the Ross Project. The NRC staff established May 13, 2013, as the deadline for submitting public comments on the DSEIS. Forty-three documents were submitted to the NRC by e-mail and U.S. mail containing comments on the proposed Ross Project.

B.2 Public Participation

Public participation is an essential component of the NRC's environmental-review process. This section describes the process for public participation during the NRC staff's development of the SEIS. The NRC conducted an open, public SEIS development process consistent with the requirements of the *National Environmental Policy Act of 1969* (NEPA) and NRC regulations. The NRC staff met with Federal, State, and local agencies and authorities as well as public organizations during a site visit to gather site-specific information. The NRC provided a 45-day public-comment period for agencies, organizations, and the general public to review the DSEIS and provide comments.

B.2.1 Notice of Intent to Develop the SEIS

The NRC staff published a "Notice of Intent" (NOI) to prepare the Ross Project SEIS in the *Federal Register* (76 FR 71082) on November 16, 2011, in accordance with NRC regulations.

B.2.2 Public Participation Activities

As described in SEIS Section 1, the NRC staff met with Federal, State, and local agencies and authorities during the course of an expanded site visit to the proposed Ross Project site and its vicinity. The purpose of this visit and these meetings was to gather additional site-specific information to assist with the Ross Project environmental review. As part of information gathering, the NRC staff also contacted potentially interested Native American Tribes and local authorities, entities, and public interest groups in person and via e-mail and telephone. The NRC staff also held 10 public meetings or teleconferences with the Applicant from 2010 through 2012. Meeting notices and summaries are available through the NRC website: http://www.nrc.gov/materials/uranium-recovery/license-apps/ross.html.

B.2.3 Issuance and Availability of the SEIS

On March 29, 2013, the NRC staff published a "Notice of Availability" (NOA) for the DSEIS in the *Federal Register* (78 FR 19330). In this notice, the NRC staff provided information on how to access or obtain a copy of the DSEIS for the Ross Project. Electronic versions of the DSEIS and supporting information were made available through the NRC's Agencywide Documents

Access and Management System (ADAMS), which is accessible through the NRC website: http://www.nrc.gov/readingrm/adams.html. The public may examine and have copied, for a fee, the SEIS and other related publicly available documents from the NRC Public Document Room. Copies of the DSEIS were also publicly available at Crook County Libraries in Hulett and Moorcroft, Wyoming.

B.2.4 Public Comment Period

In the NOA for the DSEIS cited above, the NRC indicated that public comments on the DSEIS should be submitted by May 13, 2013. Members of the public were invited and encouraged to submit related comments through different media. Electronically, comments could be submitted to the Federal rulemaking website. Written comments could be submitted by mail or facsimiles. The 45-day period for public comments (i.e., from March 29, 2013, to May 13, 2013) met the minimum 45-day comment period required under NRC regulations.

B.3 Comment Review Methods

The NRC staff received 1,120 comments from 43 documents via e-mail and U.S. mail during the comment period. Each of these comments has been considered carefully, and each has been summarized and responded to in this Appendix. Each comment was individually identified, uniquely numbered, and responded to by the NRC, using a systematic approach which involved identifying individual comments from the source documents, entering comment information into a database, sorting comments by topic, and then identifying and distributing to individual NRC staff members for review, summary, and response.

The NRC staff reviewed all comment documents and identified, marked, and consecutively numbered individual comments in each document. Comment numbers followed a three-digit numbering system separated by a hyphen. The comment number to the left of the hyphen is the source-document number (i.e., each commenter was assigned its own number). The number to the right of the hyphen is a consecutive number for each comment identified in a specific source document. Table B.1 provides an alphabetical list of all commenter names, their affiliations, and the unique document numbers assigned to all of their comments (i.e., the number to the left of the hyphen). Table B.2 provides this same information sorted numerically by source comment-document number. Readers can use these tables to electronically search this Appendix to locate comments submitted by specific individuals or organizations as well as to find individuals or organizations associated with comments described in Section B.5.

In addition to the numbering, each unique comment was also assigned a topic category to facilitate NRC's sorting and reviewing comments on similar topics. Topic categories are aligned with the topics included in Section B.5 of this Appendix. Following the initial comment identification review, the identified comments were entered into a database that allowed individual comments to be sorted by topic and distributed to staff for further consideration. The NRC staff then continued sorting and reviewing all comments within specific topic categories, developed comment summaries and responses for this Appendix, and made changes to the SEIS, as appropriate, to address the public comments. Based on the similarity of comments related to a specific topic, as appropriate, the NRC staff consolidated same or similar comments within each topic to facilitate developing summaries and responses. This approach allowed multiple, similar comments to be addressed with a single response to avoid duplication of effort and to enhance readability of this Appendix. A response has been provided for each comment

or group of comments. Each response indicates whether the DSEIS was modified in the FSEIS as a result of the comment.

B.4 Major Issues and Topics of Concern

The majority of comments received addressed specific items within the scope of the DSEIS for the Ross Project. Topics raised included, but were not limited to, a variety of concerns about the purpose, need, and scope of the SEIS; regulatory issues; NEPA-related concerns; the description of the ISR (i.e., uranium-recovery) process; land use; transportation; surface water, ground water, and wetlands; ecological resources; air quality; noise; historical and cultural resources and Tribal concerns; scenic and visual resources; socioeconomics; occupational and public health and safety; waste management; and cumulative impacts.

Other comments addressed topics and issues that are not applicable to the Ross SEIS, including general support or opposition to uranium mining or milling; discussion of the legacy of past uranium mining and milling; evaluation of the NRC regulatory program or licensing process; identification of environmental impacts at disposal facilities for byproduct material and wastes; and comments not specifically directed toward the SEIS. For example, some comments were exclusively directed toward the NRC's GEIS for in situ uranium milling, NUREG–1910 (NRC, 2009b).

Table B.1
Names of Commenters
(by Last Name with Affiliation, Document Number, and ADAMS Accession Number)

Last Name	First Name	Affiliation	Comment Document Number	ADAMS Accession Number
Ames-Curtis	Juli	No known affiliation	RP034	ML13137A090
Anderson	William	No known affiliation	RP025	ML13137A008
Anderson	Shannon	Powder River Basin Resource Council	RP041	ML13137A021
Baker	Jerri	No known affiliation	RP022	ML13137A010
Brennan	Tamra	Protect Sacred Sites	RP042	ML13137A056
Concerned Community Members		Residents and Landowners of Oshoto	RP016	ML13137A014
Dale	John	Truth about Mining	RP002	ML13130A232
Dale	John	No known affiliation	RP007	ML13137A004
DeCory	Jace	No known affiliation	RP033	ML13137A089
Durrum	Kathey	No known affiliation	RP003	ML13130A236
Fettus	Geoffrey	Natural Resources Defense Council	RP032	ML13137A120

Table B.1
Names of Commenters
(by Last Name with Affiliation, Document Number, and ADAMS Accession Number)
(Cont.)

Last Name	First Name	Affiliation	Comment Document Number	ADAMS Accession Number
Furois	Therese	No known affiliation	RP004	ML13130A233
Goodvin	Terry	No known affiliation	RP018	ML13137A013
Griffin	Evelyn and Marvin	No known affiliation	RP014	ML13137A016
Griffin	Mike	Strata Energy, Inc.	RP024	ML13137A106
Hasselstrom	Linda M.	No known affiliation	RP019	ML13144A830
Hilding	Nancy	No known affiliation	RP038	ML13137A087
Hilding	Nancy	Prairie Hills Audubon Society	RP039	ML13137A085
Jackson	Sherri	No known affiliation	RP012	ML13137A018
Johnson	Andy	Dakota Rural Action - Black Hills Chapter	RP029	ML13137A088
Jones	James	No known affiliation	RP027	ML13137A051 & ML13137A053 [Duplicate]
Katus	Jean	No known affiliation	RP021	ML13137A009
Knudson	Rodney	Ranchers and Neighbors to Protect Our Water	RP028	ML13137A050
Konishi	Mark	Wyoming Game and Fish Department	RP036	ML13137A086
Larson	Patsy	No known affiliation	RP010	ML13137A007
Leas	Rebecca	No known affiliation	RP015	ML13137A015
Lloyd	Lisa	U.S. Environmental Protection Agency Region 8	RP035	ML13144A827
Lord	Rebecca	No known affiliation	RP023	ML13137A012
Parkhurst	Gena	No known affiliation	RP031	ML13137A091
Patterson	Cynthia	No known affiliation	RP013	ML13137A017

Table B.1
Names of Commenters
(by Last Name with Affiliation, Document Number, and ADAMS Accession Number)
(Cont.)

Last Name	First Name	Affiliation	Comment Document Number	ADAMS Accession Number
Pendery	Bruce	Wyoming Outdoor Council and the Sierra Club	RP020	ML13137A011
Pfeifer	Jeanette	No known affiliation	RP008	ML13137A005
Reid	Justine	No known affiliation	RP009	ML13137A006
Stewart	Robert	U.S. Department of the Interior	RP017	ML13144A826
Taylor	Joanna	No known affiliation	RP011	ML13137A019
Tope	Wilma	No known affiliation	RP043	ML13137A057
Uptain	Douglas	No known affiliation	RP030	ML13137A054
Viviano	Pamela	No known affiliation	RP040	ML13137A052
Watson	Donna	Action for the Environment	RP026	ML13137A020
Waugh	Kelly	No known affiliation	RP005	ML13130A237
Waugh	Scott	No known affiliation	RP006	ML13130A234
Wilson	Mary	Standing Rock Sioux Tribe	RP037	ML13137A055
Wolken	Paige	U.S. Army Corps of Engineers/Wyoming Office	RP001	ML13101A118

Table B.2
Comment-Document Numbers
(by Comment-Document Number, with Commenter Name, Affiliation, and ADAMS Accession Number)

Comment Document Number	Last Name	First Name	Affiliation	ADAMS Accession Number
RP001	Wolken	Paige	U.S. Army Corps of Engineers/Wyoming Office	ML13101A118
RP002	Dale	John	Truth about Mining	ML13130A232
RP003	Durrum	Kathey	No known affiliation	ML13130A236
RP004	Furois	Therese	No known affiliation	ML13130A233
RP005	Waugh	Kelly	No known affiliation	ML13130A237
RP006	Waugh	Scott	No known affiliation	ML13130A234
RP007	Dale	John	No known affiliation	ML13137A004
RP008	Pfeifer	Jeanette	No known affiliation	ML13137A005
RP009	Reid	Justine	No known affiliation	ML13137A006
RP010	Larson	Patsy	No known affiliation	ML13137A007
RP011	Taylor	Joanna	No known affiliation	ML13137A019
RP012	Jackson	Sherri	No known affiliation	ML13137A018
RP013	Patterson	Cynthia	No known affiliation	ML13137A017
RP014	Griffin	Evelyn and Marvin	No known affiliation	ML13137A016
RP015	Leas	Rebecca	No known affiliation	ML13137A015
RP016	Concerned Community Members		Residents and Landowners of Oshoto	ML13137A014
RP017	Stewart	Robert	U.S. Department of the Interior	ML13144A826
RP018	Goodvin	Terry	No known affiliation	ML13137A013

Table B.2
Comment-Document Numbers
(by Comment-Document Number, with Commenter Name, Affiliation, and ADAMS Accession Number)
(Cont.)

Comment Document Number	Last Name	First Name	Affiliation	ADAMS Accession Number
RP019	Hasselstrom	Linda M.	No known affiliation	ML13144A830
RP020	Pendery	Bruce	Wyoming Outdoor Council and the Sierra Club	ML13137A011
RP021	Katus	Jean	No known affiliation	ML13137A009
RP022	Baker	Jerri	No known affiliation	ML13137A010
RP023	Lord	Rebecca	No known affiliation	ML13137A012
RP024	Griffin	Mike	Strata Energy, Inc.	ML13137A106
RP025	Anderson	William	No known affiliation	ML13137A008
RP026	Watson	Donna	Action for the Environment	ML13137A020
RP027	Jones	James	No known affiliation	ML13137A051 & ML13137A053 [Duplicate]
RP028	Knudson	Rodney	Ranchers and Neighbors to Protect Our Water	ML13137A050
RP029	Johnson	Andy	Dakota Rural Action Black Hills Chapter	ML13137A088
RP030	Uptain	Douglas	No known affiliation	ML13137A054
RP031	Parkhurst	Gena	No known affiliation	ML13137A091
RP032	Fettus	Geoffrey	Natural Resources Defense Council	ML13137A120
RP033	DeCory	Jace	No known affiliation	ML13137A089
RP034	Ames-Curtis	Juli	No known affiliation	ML13137A090
RP035	Lloyd	Lisa	U.S. Environmental Protection Agency Region 8	ML13144A827
RP036	Konishi	Mark	Wyoming Game and Fish Department	ML13137A086
RP037	Wilson	Mary	Standing Rock Sioux Tribe	ML13137A055

Table B.2
Comment-Document Numbers
(by Comment-Document Number, with Commenter Name, Affiliation, and ADAMS Accession Number)
(Cont.)

Comment Document Number	Last Name	First Name	Affiliation	ADAMS Accession Number
RP038	Hilding	Nancy	No known affiliation	ML13137A087
RP039	Hilding	Nancy	Prairie Hills Audubon Society	ML13137A085
RP040	Viviano	Pamela	No known affiliation	ML13137A052
RP041	Anderson	Shannon	Powder River Basin Resource Council	ML13137A021
RP042	Brennan	Tamra	Protect Sacred Sites	ML13137A056
RP043	Tope	Wilma	No known affiliation	ML13137A057

B.5 Comments Summaries and Responses

B.5.1 General Opposition

Comments: RP002-001; RP022-002; RP022-003; RP022-004; RP025-002; RP025-004; RP029-006; RP033-001

The commenters expressed concern about potential problems with in situ uranium recovery and how the process could impact water resources. Another commenter noted that uranium recovery should only be performed in cases where it is needed. Another commenter expressed concern regarding the effects uranium recovery might have for the next generation and indicated that the commenter is not aware of any uranium mine that has *not* had effects.

Response: *The NRC recognizes that some commenters are not supportive of uranium mining, milling, or other uranium-recovery techniques. These comments are beyond the scope of this SEIS, which focuses on the environmental impacts of a specific license application. Further, the NRC has no role in deciding whether uranium mining, milling, or recovery is needed or not; the agency only has a role in deciding whether or not to issue a source and/or byproduct materials license. Regarding impacts to water resources, this topic is specifically discussed in SEIS Section 4.5. No changes were made to the SEIS beyond the information provided in this response.*

B.5.2 General Environmental Concerns

Comment: RP028-003

The commenter stated that the world is moving away from nuclear power because of the long-term detrimental effect of every stage of the nuclear fuel cycle, from mining to final disposal.

Response: *The NRC recognizes that some commenters are not supportive of nuclear power or uranium mining or milling. These comments are beyond the scope of the SEIS. However, the NRC does recognize the potential environmental impacts associated with uranium recovery, including leaks, spills, and excursions of the liquid mixtures used to mobilize and recover uranium (e.g., lixiviant), which could occur at the Ross Project. These potential impacts are discussed in Section 4.5.1 of the SEIS. No change was made to the SEIS beyond the information provided in this response.*

Comments: RP038-001; RP039-001

The commenter stated that the Federal government should not approve of more uranium extraction until such time as the government decides how to manage the high-level radioactive waste that is currently stored in containers at nuclear power plants, with no permanent place to dispose of it. The commenter noted that future storage of radioactive wastes generated by the future use of the uranium is a connected action to the Proposed Action and a pending disaster for future generations. Therefore, the commenter requested that the NRC not limit its SEIS discussion to the waste generated specifically at the Ross Project, but expand its discussion to all wastes at the remote facilities that the uranium is shipped to, stored, and used, as well as the transportation wastes produced. The commenter asked that the FSEIS include a discussion of inter-generational responsibility and requested that the FSEIS discuss specifically where and how radioactive wastes generated by the future use of recovered uranium derived from the Ross Project will likely be stored and how much the storage of that radioactive waste will cost taxpayers.

Response: *The NRC notes that the U.S. and other nations are working on solutions for the disposal of spent (i.e., irradiated) nuclear fuels and other high- and low-level radioactive wastes generated at commercial nuclear power plants. Information on storage and disposal of radioactive waste can be found on the NRC website (*http://www.nrc.gov/waste.html*). The interim storage and final disposal of spent fuel generated at commercial nuclear power plants and other radioactive wastes not generated at the Ross Project, however, is beyond the scope of this SEIS. The scope of the SEIS is described in SEIS Section 1.4. The NRC staff prepared this SEIS to analyze the potential environmental impacts (i.e., direct, indirect, and cumulative impacts) of the Proposed Action and of reasonable alternatives. The scope of this SEIS evaluates both radiological and nonradiological (including chemical) impacts associated with the Proposed Action and the two Alternatives discussed in this SEIS. This document also describes the unavoidable adverse environmental impacts, the relationship between short-term uses of the environment and long-term productivity, and irreversible and irretrievable commitments of resources as a result of the proposed Ross Project. No change was made to the SEIS beyond the information provided in this response.*

Comment: RP039-002

One commenter noted that the risk and the environmental impacts of nuclear war as well as nuclear winter should be discussed in the SEIS as a connected action. The commenter asked that the SEIS discuss the percentage of the world's uranium supply that would be made available by the Ross Project, noting that the existence of this uranium would allow other uranium supplies to be used for war rather than the generation of electricity.

Response: *The environmental impacts of nuclear war are outside the scope of this SEIS. The scope of this SEIS is described in SEIS Section 1.4. The NRC staff prepared this SEIS to*

analyze the potential environmental impacts (i.e., direct, indirect, and cumulative impacts) of the Proposed Action and the reasonable alternatives. The scope of the SEIS evaluates both radiological and nonradiological (including chemical) impacts associated with the Proposed Action and the two Alternatives discussed in this SEIS. This document also identifies unavoidable adverse environmental impacts, the relationship between short-term uses of the environment and long-term productivity, and irreversible and irretrievable commitments of resources. No change was made to the SEIS beyond the information provided in this response.

B.5.3 Executive Summary

Comments: RP024-024; RP024-025

The commenter requested that the Executive Summary accurately reflect the respective discussion and conclusions in SEIS Section 4.4 regarding geology and soils impacts during the aquifer-restoration phase of the Ross Project. The commenter also stated that there were additional facts that should be summarized in the Executive Summary text that support the respective conclusions. In particular, the commenter asked for more specific information regarding any expected changes to the rock matrix in the ore-zone aquifer as well as other information regarding any relationship of uranium recovery to the subsidence of local soils and/or geological fault activation.

Response: *The NRC has revised the Executive Summary text to ensure its consistency with FSEIS Section 4.4. The text is now a concise summary of the information provided in FSEIS Section 4.4.*

B.5.4 Purpose, Need, and Scope of the SEIS/GEIS

B.5.4.1 Description of the SEIS/GEIS Purpose and Need

Comment: RP024-066

The commenter suggested that the first page of Section 1 in the SEIS clarify that the GEIS and SEIS were prepared based upon 10 CFR Part 51.20(b)(8), which requires an EIS-level analysis for all new source-material (and/or byproduct-material) uranium-recovery and uranium-milling licenses.

Response: *The commenter is correct that the GEIS and this SEIS were prepared based upon the requirement at 10 CFR Part 51.20(b)(8). However, the NRC staff does not find that this level of detail is necessary for the section of the SEIS referenced in this comment. This information is provided in the SEIS in Section 1. Therefore, no changes to the SEIS were made in response to this comment.*

Comment: RP032-001

The commenter noted that DSEIS Section 1.3 stated, “The purpose and need for this Proposed Action is to provide an option that allows the Applicant to recover uranium and produce yellowcake at the Ross Project area.” The commenter expressed concern that the purpose and need as stated could facilitate future expansion with minimal or no further environmental review. The commenter also noted that the Proposed Action includes the recovery of vanadium, which

was not included in the purpose and need statement. The commenter suggested that a more appropriate purpose and need would be stated as follows:

> The purpose and need for the proposed action -- the granting of an NRC license to recover uranium from [name wellfield areas] and process it at [name Central Processing Facility] for [x years]—is to ensure, through a rigorous nuclear safety and NEPA review process prior to licensing, that the uranium recovery activities and associated environment, safety, and health risks and environmental impacts described in the license application and applicant's *Environmental Report*, faithfully represent the full range of activities, risks, and impacts that will arise as a result of the licensed activity, and that all these activities will be conducted in a manner that: (1) ensures adequate protection of public health and safety and the common defense and security; (2) identifies and seeks to avoid or minimize all reasonably foreseeable environmental impacts, while mitigating any unavoidable adverse environmental impacts.

Response: *The statement of the purpose and need in DSEIS Section 1.3 is derived from the proposed Federal action. Under the* Atomic Energy Act of 1954 *(AEA), the NRC has statutory authority to issue licenses for the possession and use of certain AEA-regulated radioactive materials and the particular activities involving these materials. Based upon the NRC's statutory authority, the proposed Federal action is the NRC's decision whether to grant or to deny a license to a private party that would allow the conduct of uranium-recovery operations to extract uranium and produce yellowcake at a particular site.*

The recovery and production of vanadium requested by the Applicant is attendant to the recovery of uranium and production of yellowcake and does not alter the process from what it would be for uranium recovery only. The purpose and need statement for this proposed Federal action must consider the Applicant's request in providing an option that would allow the Applicant to recover uranium and to produce yellowcake at the Ross Project. Therefore, the purpose and need of this Proposed Action encompasses the recovery and production of vanadium.

The NRC would not accept a proposed purpose and need statement if it is unduly narrow, but the NRC also allows deference to the business decisions of an applicant. If the NRC decides to grant the license request, the specific applicant must comply with the specific license requirements, NRC's regulatory requirements, and any other relevant local, State, or Federal requirements to operate its facility. No changes were made to the SEIS beyond the information provided in this response.

B.5.4.2 Use of the GEIS in Site-Specific Environmental Reviews

Comments: RP011-001; RP012-001; RP013-001; RP014-001; RP015-001; RP016-010; RP019-001; RP021-001; RP023-001; RP027-001; RP029-005; RP030-001; RP032-078; RP033-002; RP034-001; RP039-005; RP040-002; RP041-001; RP043-005

The commenters stated that the GEIS should not be used when analyzing the environmental and other impacts of the Ross Project with respect to water, land, air, ecology, occupational and public health and safety. One commenter stated the tiering off the GEIS was only used as a way to streamline and speed up the review process. Another commenter stated that to do so "was arbitrary, capricious, and frankly ridiculous."

Response: *As discussed in SEIS Section 1.1, the NRC staff prepared this SEIS for the Ross Project consistent with its regulations under 10 CFR Part 51 that implement NEPA and with its guidance for environmental reviews as found in NUREG–1748 (NRC, 2003b). In addition, the GEIS provides a starting point for all of the NRC's NEPA analyses for site-specific license applications for new ISR facilities, such as Strata Energy, Inc.'s (Strata) (herein referred to as the "Applicant"*), *license application for the proposed Ross Project. This SEIS is a supplement to the GEIS and incorporates by reference relevant information contained in the GEIS as well as its findings and conclusions concerning potential environmental impacts.*

The NRC's analysis of the potential environmental impacts to land, water, air, and ecology as well as public and occupational health are found in SEIS Sections 4.2.1, 4.5.1, 4.7.1, 4.6.1, and 4.13.1, respectively. These SEIS Sections consider the site-specific information provided in the license application by the Applicant. The site-specific analyses determined that, for the proposed Ross Project, the significance of potential impacts would be SMALL to MODERATE after mitigation measures are considered; the final significance depends upon the respective resource area. The site-specific determination draws on the evaluation found in the GEIS and the NRC staff's independent evaluation of the site-specific information provided in the Applicant's license application and its responses to the NRC's requests for additional information (Strata, 2011a; Strata, 2012a). No changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-071

The commenter suggested adding a discussion of the concept of "tiering" from the GEIS prior to the scoping discussion. The commenter also suggested that the FSEIS include a statement indicating that the NRC is not required to conduct any form of scoping for an SEIS under 10 CFR Part 51, but it did so anyway for the GEIS.

Response*: The GEIS is a generic analysis of the potential impacts of individual ISR facilities in a specified geographic area. The GEIS for ISR facilities serves as the starting point for environmental reviews of site-specific ISR license applications. The NRC "tiers" an SEIS from the GEIS by incorporating applicable GEIS discussions by reference and by adopting relevant GEIS environmental impact conclusions.*

The NRC conducted scoping in developing the GEIS. Scoping provides a means by which the scope of issues to be addressed in the environmental review related to the Proposed Action are identified. The scoping process for the GEIS identified local conditions and potential impacts that could be considered generically and those that need to be analyzed using site-specific information in an SEIS. SEIS Section 1.4.2 describes the scoping activities conducted for the development of the GEIS and future supplements to the GEIS.

The NRC's NEPA-implementing regulations, specifically 10 CFR 51.26(d) and 51.92(d), provide that the NRC staff need not conduct a scoping process when a supplement to an EIS is prepared. Nevertheless, the NRC staff has the discretion to decide whether to incorporate a scoping process when preparing a SEIS. During the development of this SEIS, the NRC staff conducted additional scoping activities, which are described in Section 1.4.2 of the SEIS. SEIS Section 1.4.2 has been revised to include the information regarding tiering and scoping that is provided in this response.

Comment: RP024-074

The commenter noted that the DSEIS stated that "Some issues and concerns raised during the scoping process of the GEIS were determined to be outside the scope of the GEIS" and "are also outside the scope of this SEIS" (NRC, 2009b). The commenter stated that it is important to provide a complete discussion of all of these items in order to ensure that the FSEIS is fully accurate and inclusive.

Response: *The quoted text is from SEIS Section 1.4.4, "Issues Outside the Scope of the SEIS." A list of topics that were considered outside the scope of the GEIS (NRC, 2009b) and this Ross Project SEIS is provided in this Section in the SEIS. In addition, a citation for Appendix A of the GEIS is provided for readers who wish to review additional details regarding the topics that are considered outside the scope of both documents. Therefore, no changes were made to the SEIS beyond the information provided in this response.*

B.5.4.3 References

Duke Energy Corp. (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-02-14, 55 NRC 278, 295. 2002.

Kleppe v. Sierra Club, 427 U.S. 390, 410 n. 20. 1976.

(US)NRC (Nuclear Regulatory Commission). "Standard Review Plan for In Situ Leach Uranium Extraction License Applications, Final Report." NUREG–1569. Washington, DC: USNRC. 2003a. ADAMS Accession No. ML032250177.

(US)NRC. "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." NUREG–1748. Washington, DC: USNRC. 2003b. ADAMS Accession No. ML032450279.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

B.5.5 SEIS/GEIS Methods and Approach

B.5.5.1 Reliance on Regulatory Compliance to Limit Impacts

Comment: RP032-091

The commenter asserted that DSEIS Section 5, "Cumulative Impacts," did not present a quantitative analysis of cumulative impacts, or even substantive discussions of qualitative factors. In addition, the commenter questioned the use of regulations and monitoring programs in environmental-impact analyses and suggested that regulatory compliance should not serve as a substitute for thorough analysis of impacts and presentation of findings within the SEIS.

***Response**: The NRC staff believes that the information presented in SEIS Chapter 5 is valid and relevant to the assessment of potential cumulative impacts. Regulatory requirements do mitigate potential impacts and are used in the impact analyses for the NRC to establish an upper bound on possible impacts. Mitigation measures are described throughout SEIS Sections 4 and 5, and additional monitoring measures are described in Section 6.*

The NRC does not agree with the commenter's premise that SEIS Section 5 did not present quantitative analysis of cumulative impacts or even substantive discussions of qualitative factors. The NRC staff acknowledges that quantitative analysis of potential cumulative impacts is constrained by the limited availability of quantitative data from past, present, and reasonably foreseeable future actions (RFFAs). However, assumptions regarding the relative size of RFFAs compared to the Ross Project have been used where appropriate to apply quantitative information related to the impact analyses. Quantitative data can be found throughout Section 5 in the SEIS. For example, in the cumulative-impact analysis of water resources, the NRC staff assumed that the impacts to water quantity would be roughly proportional to the size of a potential future uranium-recovery project compared to the Ross Project. Note that the NRC has revised the cumulative-impact analyses presented in the FSEIS in Section 5 to improve the transparency and clarity of the analyses as a result of this comment and others.

B.5.5.2 SEIS/GEIS Methods and Approach to Impact Significance

Comments: RP024-056; RP024-057; RP024-472

The commenter requested that "MODERATE" be changed to "SMALL to MODERATE" for consistency throughout the SEIS, particularly in the Executive Summary and Section 4.5.1.2.

***Response:** Although other comments included factual or editorial bases for a request to change the significance of the potential impacts in particular findings in the SEIS (viz. Comments Nos. RP024-019, RP024-020, RP024-220, RP024-221, and RP024-379), these comments related to the Executive Summary and SEIS Section 4.5.1.2 do not. The NRC does not agree that a finding of MODERATE significance should be changed to "SMALL to MODERATE" for consistency throughout the SEIS. When the significance of an impact's finding ranged from SMALL to MODERATE, then the SEIS included the range; when it did not, and the significance was MODERATE in all cases, then no range of significance was appropriate. The NRC consequently notes that "SMALL to MODERATE" indicates a different range of magnitudes related to resource-area impacts (i.e., a different range of "significance") than does simply "MODERATE." No changes were made to the SEIS beyond the information provided in this response.*

B.5.6 Regulatory Issues and Process

B.5.6.1 NRC Policies and Practices

B.5.6.1.1 NRC Licensing Process

Comment: RP024-001

The commenter stated that it commends the work completed by the NRC staff and its preparation of the DSEIS in a timely manner. Consistent with the conclusions in the GEIS and publication of the *Safety Evaluation Report* (SER), the commenter agrees with the NRC staff's conclusion that the Applicant be issued a license by the NRC.

Response: *The NRC recognizes that the commenter supports the staff's environmental review for the proposed Ross Project. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP041-013

The commenter stated that the DSEIS did not discuss source and byproduct materials license requirements and how they will or will not mitigate impacts. The commenter also noted that before the DSEIS was released for public review and comment, the NRC essentially finalized Strata's license and had met with Strata several times to negotiate license conditions. The commenter expressed concern that the negotiations were not carried out under NEPA's public-review and comment processes and stated that the NRC acted prior to its NEPA review. The commenter further commented that by negotiating with Strata, the NRC has been locked into positions that would be difficult to reverse after its NEPA review is complete. Therefore, the commenter stated that the NRC needs to re-release a new draft of the DSEIS with the Draft Source and Byproduct Materials License included as an appendix and its conditions fully discussed and analyzed throughout the text of the document. The commenter stated that this is particularly important because the NRC license is the only source of binding and enforceable mitigation measures specific to the Ross Project and, therefore, the license conditions should be the only source of mitigation measures that can be relied upon by the agency to reduce impacts related to Strata's Ross Project.

Response: *The development of a Draft Source and Byproduct Materials License for the Ross Project is part of the NRC's licensing process for the Ross Project. However, the conditions of the Draft License are subject to change prior to issuance of a final license and the development of the Draft License does not guarantee that such a license would be issued. Meetings between the NRC and the Applicant to negotiate the conditions of the Draft License were publicly noticed. The public was invited to observe the meetings or participate by phone and the public could ask questions at the end of the business portions of the meetings.*

The NRC staff's Draft License has been prepared concurrently with this SEIS. The DSEIS included requirements from the Draft License that were available at the time that the DSEIS was being prepared. Following completion of the DSEIS, the NRC staff has continued to develop the Draft License. The FSEIS includes additional requirements from the Draft License that were not available to be included in the DSEIS.

The NRC implements best management practices (BMPs), mitigation measures, and management actions for the Ross Project so as to avoid and reduce environmental impacts. By license condition, the NRC also requires Applicants of ISR facilities to obtain the necessary permits and licenses from the appropriate regulatory authorities prior to operating the facility (Draft License Condition No. 12.1) (NRC, 2014b). Mitigation may be imposed as a requirement other agencies establish through required permits the Applicant must obtain for the proposed Ross Project. The NRC staff believes the appropriate mitigation measures have been described under the Proposed Action. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-068

The commenter noted the following statement in SEIS Section 1.2: "Based upon the application, the NRC's Federal action is the decision to either grant or deny the license," is incorrect. The commenter requested a revision to the SEIS that would state that the NRC is empowered under the AEA to act in one of three ways: 1) grant a requested licensing action, 2) grant a requested licensing action with conditions, or 3) deny a requested licensing action.

Response: *Under the AEA, the NRC has statutory authority to issue licenses for the possession and use of AEA-regulated radioactive materials and particular activities involving these materials. Based on the NRC's statutory authority, the proposed Federal action is the NRC's decision whether to grant or deny a private party's license application to conduct uranium-recovery operations to extract uranium and produce yellowcake at a particular site. If the NRC staff decides to grant the license request, it may do so with conditions, but the Federal action is the decision to grant or deny the license. The Applicant must comply with the license requirements, NRC regulatory requirements, and any other relevant local, State, or Federal requirements to operate its facility. No changes were made to the SEIS beyond the information provided in this response.*

B.5.6.1.2 Adequacy of NRC Regulations and Practices

Comment: RP032-004

The commenter noted that neither the specific aquifer-restoration standards that would be applied to the ore zone's (OZ) ground water nor the analysis that demonstrated that such standards would be protective of the surrounding ground water were provided in the DSEIS. Moreover, the commenter noted that "3,000 drillholes and wells" would suggest, on the contrary, that there is a potential for substantial fluid migration and degradation of ground-water quality outside of the OZ.

Response: *The NRC disagrees with this comment. As discussed in SEIS Section 4.5.1.3, Condition No. 10.6 in the Draft Source and Byproduct Materials License for the proposed Ross Project would require that hazardous constituents in the ground water of the exempted aquifer be restored to the numerical ground-water standards as required by 10 CFR Part 40, Appendix A, "Criteria Related to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content," Criterion 5B(5) (NRC, 2014b). The Applicant's meeting these standards for the exempted aquifer would ensure that present or potential future sources of drinking water outside of the exempted aquifer would be protected. This requirement is the*

basis for the determination in SEIS Section 4.5.1.3, that the long-term impacts to the aquifer outside the exempted aquifer would be SMALL.

Criterion 5B(5) of Appendix A requires that the concentration of a given hazardous constituent at the point of compliance (i.e., edge of exempted aquifer) must not exceed 1) the NRC-approved post-licensing, pre-operational concentration of that constituent in ground water (5B(5)(a)); 2) the respective numeric value in the table included in Paragraph 5C of Criterion 5B(6) if the specific constituent is listed in the table and if the post-licensing, pre-operational concentration of the constituent is below the value listed (5B(5)(b)); or 3) an Alternate Concentration Limit (ACL) that the Commission establishes for the constituent (5B(5)(c)). To achieve this requirement, Criterion 5B(6) states that, conceptually, post-licensing, pre-operational concentrations pose no incremental hazard and the numeric limits in Paragraph 5C pose acceptable hazards, but these two options might not be practical. In this case, the NRC may establish an ACL if the licensee has demonstrated that such an ACL does not present a significant hazard to present or potential future sources of drinking water outside of the exempted aquifer.

As discussed in FSEIS Sections 2.1.1.1 and 4.5.1.2, Condition No. 10.12 of the Draft License would require that the Applicant attempt to locate and plug all historical drillholes located within the perimeter monitoring-well rings for each wellfield (NRC, 2014b). The hydrologic tests necessary for the hydrologic-test data package that would be required by License Condition No. 10.13 would ensure that the Applicant identify any communication between the ore-zone and the surrounding aquifers from historical drillholes that could still need to be properly abandoned. As described in SEIS Section 4.5.1.2, the impacts to the aquifers were determined to be SMALL by the NRC staff, because of the mitigating effects of the Applicant's plugging drillholes and subsequent hydrologic testing. FSEIS Sections 2.1.1.1 and 4.5.1.2 have been revised to clarify these requirements and the associated process of the NRC's determining ground-water-restoration compliance. (Also see Comment Nos. RP024-013, RP024-161, RP024-169, RP024-170, RP024-425, and RP041-006 among others related to water-protection standards.)

B.5.6.1.3 Regulatory Definitions

Comments: RP024-004; RP024-115; RP024-146; RP024-160; RP024-177; RP024-180: RP024-181; RP024-182; RP024-199; RP024-202; RP024-206; RP024-375; RP024-381; RP024-384; RP024-568; RP024-579; RP024-585; RP024-703; RP024-736

The commenter recommended that the SEIS use the modifier "11e.(2)" instead of using the term "byproduct material" throughout the SEIS. The commenter noted that other classes of byproduct material are defined by the AEA and three of these classes are not applicable to the Ross Project.

Response: *Since the GEIS was prepared, the NRC staff has elected not to use the modifier "11e.(2)" in documents prepared for a Part 40 source and byproduct materials license for the following reason: in response to the* Uranium Mill Tailings Radiation Control Act of 1978 (*UMTRCA*)*, the definition of byproduct material included in Part 40 expanded the definition of 11e.(2) byproduct material as was used in the AEA. The definition of byproduct material (under Part 40) would include those materials defined by 11e.(2) in the AEA. Therefore, the lack of the "11e.(2)" modifier to "byproduct material" does not diminish its applicability. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-084

The commenter suggested that DSEIS Section 1.7.3.1 be updated to indicate that a new Memorandum of Understanding (MOU) was signed by the U.S. Bureau of Land Management (BLM) on February 12, 2013, and by the NRC on February 4, 2013.

Response: *The commenter is correct that, on February 12, 2013, the NRC and the BLM entered into an MOU that sets forth the cooperative working relationship between the NRC and the BLM, primarily for the purpose of enhancing each agency's compliance with the NEPA and Section 106 of the National Historic Preservation Act of 1966 (NHPA). The MOU supersedes the original MOU entered into between the NRC and the BLM on November 30, 2009. The new MOU was signed while the DSEIS was in the final-printing review stage; thus, the signing of the new MOU was not captured in the DSEIS. Therefore, FSEIS Section 1.7.3.1 has been revised to reflect this new information.*

Comment: RP024-140

The commenter noted that the description of "Aquifer Exemption" that appears in the text box entitled "What are underground injection control permits?" in DSEIS Section 2.1.1.1 does not include the criteria for an aquifer exemption when the aquifer is mineral producing.

Response: *The NRC has revised the "What are underground injection control permits?" text box in SEIS Section 2.1.1.1. The following clause was added: "…and whether the aquifer contains minerals that are expected to be commercially producible…" to the list of criteria for an aquifer exemption in the respective text box in FSEIS Section 2.1.1.1.*

Comment: RP024-141

The commenter suggested that the text box entitled "What are underground injection control permits?" in DSEIS Section 2.1.1.1 be revised to remove the statement, "This Class includes all wells that dispose of waste on a commercial basis," under the description of "Industrial and Municipal Waste Disposal Wells," because Class II and V wells also may dispose of waste.

Response: *The NRC agrees with the commenter and has revised the "What are underground injection control permits?" text box in FSEIS Section 2.1.1.1 by deleting the statement that "This Class includes all wells that dispose of waste on a commercial basis" under the description of "Industrial and Municipal Waste Disposal Wells."*

Comment: RP024-184

The commenter recommended revising the definition of "liquid byproduct waste" in the text box entitled "What types of wastes would be generated at the proposed Ross Project?" in DSEIS Section 2.1.1.5, which currently states that the waste "is contaminated with byproduct material." The commenter suggests either removing the statement or revising the text to make the definition compatible with the "11e.(2) byproduct material definition" in 10 CFR Part 40.4.

Response: *The NRC staff agrees that the definition of "liquid byproduct waste" as stated in the text box is not appropriate. The "waste" is the "byproduct material" and is not "contaminated with byproduct material." The text box in FSEIS Section 2.1.1.4 entitled "What types of wastes would be generated at the proposed Ross Project?" has been revised to define "Liquid*

Byproduct Material" as a type of liquid waste generated that would be generated by the proposed Ross Project, in addition to hazardous and sanitary wastes (i.e., domestic waste) as well as well-development and ground-water-sampling waste waters.

Comment: RP024-209

The commenter asserted that the following statement in DSEIS Section 2.1.1.7 was inconsistent with the Draft Source and Byproduct Materials License: "A decommissioning funding plan (DFP) would be required from the Applicant as an NRC license condition; the DFP would contain a decommissioning cost estimate, the amount of which the Applicant would be required to maintain in a financial-surety arrangement" (NRC, 2014b). The commenter requested that the FSEIS be revised for consistency with the Conditions of the Draft License. The commenter pointed out that Draft License Condition No. 9.5 states that 1) "Within 90 days of NRC approval of a revised closure (decommissioning) plan and its cost estimate, the licensee shall submit, for NRC staff review and approval, a proposed revision to the financial assurance arrangement if estimated costs exceed the amount covered in the existing arrangement" and 2) "The licensee shall continuously maintain an approved surety instrument for the Ross Project, in favor of the State of Wyoming (Wyoming)." The commenter requested that the statement identified above be revised for consistency with the Draft License.

Response: *The NRC agrees with the commenter's recommendations. FSEIS Section 2.1.1.7 has been revised accordingly. The statement noted by the commenter as inaccurate and the succeeding statements were replaced with a discussion of Condition No. 9.5 of the Draft Source and Byproduct Materials License.*

Comment: RP024-749

The commenter suggested that the SEIS not use the term "impoundments" because this term implies tailings that are produced during ore milling and such tailings are not generated by an ISR facility. The commenter suggested that, for consistency with the license application and the Draft Source and Byproduct Materials License, the term "ponds" should be used throughout the SEIS (NRC, 2014b).

Response: *The commenter is correct that Strata's license application and the early drafts of the License use the term "pond(s)" when describing the proposed surface impoundments that would be used to retain and store liquid byproduct material. Nonetheless, the NRC disagrees that the term "impoundments" implies tailings, and the SEIS clearly states that the impoundments would be used to store waste waters and liquid byproduct material. By virtue of being in the license application and in the Draft Source and Byproduct Materials License, the ponds are "regulated" features, a view which may not be obvious to the average person reading the SEIS. When the phrase "surface impoundments" is used in the SEIS, rather than the term "ponds," it becomes clearer that the surface impoundments are, in fact, regulated. Thus, the NRC staff has determined that the term "impoundments" and the phrase "surface impoundments" are more consistent with the pertinent regulations (e.g., see the definition of "surface impoundment" under 10 CFR Part 40, Appendix A). No changes were made to the SEIS beyond the information provided in this response.*

B.5.6.1.4 NRC NEPA Process Implementation

Comments: RP032-002; RP032-067; RP041-009

The commenters stated that the NRC violated NEPA by failing to include the project encompassing the entire Lance District as within the scope of this SEIS. The commenters stated that the Ross Amendment Area 1, Kendrick Satellite Area, Richards Satellite Area, and Barber Satellite Area, all potential satellite areas to the Ross Project, are actions connected to the Proposed Action (i.e., licensing of the Ross Project). One commenter noted that meaningful consideration of impacts in the SEIS is limited to the Ross Project wellfields only, even though the capacity of the proposed Central Processing Plant (CPP) has been sized to accommodate a throughput four times greater than that required by the Ross Project alone, and it would thus enable the simultaneous uranium recovery in additional areas. One commenter asked if construction of the CPP would be economically viable if its feedstock were limited to the Ross Project and, if not, the commenter asked why the scope of the Proposed Action in the SEIS is limited to the Ross Project. The other commenter expressed concern that the satellite areas could be licensed through amendments to the license for the Ross Project, so that there would be no opportunity for a contested hearing and a NEPA "Findings of No Significant Impact" (FONSI) would be prepared for each additional satellite operation (NRC, 2014b). One commenter stated that the entire "Affected Environment" section of the SEIS (Section 3) should be revised to encompass a description of the wider area that could be "solution mined" as a direct consequence of the NRC's proposed licensing action (i.e., the wider area would include the following: "Ross Permit Area"; "Ross Amendment Area #1"; "Kendrick Production Unit (Amendment Area #2)"; "Richards Production Unit (Amendment Area #3)"; "Barber Production Unit (Amendment Area #4)"; "Warren Project"; "Richards Project," "Osborne Project"; "Chatterton Project"; "Brooks Project"; "Carey Project"; "Houx Project"; "Clark Project"; "Lucas Project"; and "Emerson Project.").

Response: *As noted in SEIS Section 2.1.1, Strata informed the NRC via its license application that it has identified four other uranium-bearing areas that would extend the area of uranium recovery to the north with the Ross Amendment Area 1 and to the south of the Lance District with the Kendrick, Richards, and Barber satellite areas. If the NRC approves the Ross Project license application, Strata would only be authorized to operate on the Ross Project site, so development of the wider area described by the commenter would not be a direct consequence of licensing the Ross Project. Furthermore, granting a license to Strata for the Ross Project would not commit the Agency to subsequent approvals of Strata's proposed satellite areas. If Strata were to submit a license-amendment application to the NRC to expand operations into any of the satellite areas, the NRC would offer an opportunity for a hearing and the NRC staff would prepare an SER and a NEPA document.*

The Supreme Court has stated that agencies need not consider "possible environmental impacts of less imminent actions when preparing the impact statement on proposed actions." Kleppe v. Sierra Club, 427 U.S. 390, 410 n. 20 (1976). The Commission has agreed that to bring NEPA into play, a possible future action must at least constitute a "proposal" pending before the Agency, and it must in some way be interrelated with the action that the Agency is actively considering. See Duke Energy Corp. (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-02-14, 55 NRC 278, 295 (2002). The NRC categorized Strata's Lance District plans provided in its license application as reasonably foreseeable actions, so they are considered in the cumulative-impact analyses of this SEIS. Should any of the contemplated actions later reach the stage of an actual proposal, the environmental impacts

of the Ross Project, if licensed, can be considered when preparing the comprehensive statement on the cumulative impacts of that proposal. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-005

The commenter noted that the significance of potential environmental impacts in the DSEIS is categorized as SMALL, MODERATE, or LARGE and stated that this impact-classification method is inadequate and that the DSEIS illustrates these problems. Specifically, the commenter stated that the SMALL, MODERATE, and LARGE terms are not tied to any consistent set of quantitative or otherwise objectively ascertainable metrics for one's assessing and comparing the impacts of uranium-recovery activities.

Response: *SEIS Section 1.4.3 provides a summary of the methodology for and describes the types of considerations the NRC staff used to determine the significance of identified impacts as SMALL, MODERATE, or LARGE. According to the Council on Environmental Quality (CEQ), the significance of impacts is determined by one's considering both context and intensity (40 CFR Part 1508.27). The NRC established this standard of significance for its assessment of environmental impacts during the conduct of environmental reviews originally in its* Generic Environmental Impact Statement for License Renewal of Nuclear Plants *(NRC, 1996a), which used the CEQ regulations as a basis for these significance levels. This SEIS was prepared in accordance with NRC guidance presented in NUREG–1748*, Environmental Review Guidance for Licensing Action Associated with NMSS Programs *(NRC, 2003b), which incorporates these significance-level categories. See also Comment Nos. RP024-056, RP024-057, and RP024-472. Therefore, no changes were made to the SEIS as a result of this comment.*

Comment: RP041-006

The commenter stated that the DSEIS's failure to disclose baseline water quality violates NEPA's public disclosure and analysis requirements. The commenter refers to the information provided in pleadings in the license-intervention proceeding before the Atomic Safety Licensing Board (ASLB) regarding contentions claiming flaws in the Applicant's water-sampling regime and claiming that neither the Applicant nor the NRC has properly put forward the correct and accurate data to determine baseline water quality. The commenter incorporates the pleadings by reference into this comment. The commenter goes on to state that the NRC fully acknowledges that baseline water quality has yet to be established and disclosed and that this failure has to two important consequences: 1) the DSEIS cannot analyze or disclose impacts related to excursions because those yet-to-be-determined baseline water-quality values would be used to determine whether excursions have occurred through the Applicant's monitoring program; and 2) the DSEIS cannot analyze or disclose impacts related to the failure (or even the unlikely success) of the Applicant to restore water quality to baseline conditions because the NRC does not yet know what those baseline restoration targets are. This commenter stated that because of 1) and 2) above, the most important impact analyses would occur post-NEPA and after the NRC has made its decision. Therefore, the commenter finds that, in addition to violating basic NEPA principles regarding the importance for upfront disclosure and analysis prior to the NRC's making its decision, the failure also violates NEPA's dual purpose of disclosing the information to the public to facilitate meaningful participation through the public-comment process. Through NEPA, the commenter stated, an agency "must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken," (40 Code of Federal Regulations [CFR] Part 1500.1[b].) The

commenter stated that the public is prevented from participating in the NRC's NEPA process because the public is left with nothing on which to comment.

Response: *As the commenter notes, this comment was also raised as a contention against the Applicant's* Environmental Report *(ER) and later as a contention against the DSEIS in pleadings before the ASLB. Therefore, the NRC staff's responses to this contention are incorporated by reference into this comment response, and can be accessed through the NRC's Agencywide Documents Access and Management System (ADAMS) at Docket No. 04009091. According to 10 CFR Part 51.45, which falls under Subpart A (i.e., NEPA) regulations implementing Section 102(2), an application submitted to the Commission for a license is required to include an ER, which shall contain a description of the environment affected by a proposed action. Also, according to NUREG–1748 (NRC, 2003b), which is the guidance document that the Applicant and the NRC staff used to prepare the ER and the SEIS, respectively, the description of the affected environment focuses on the baseline conditions (i.e., the status quo). 10 CFR Part 51 does not define the specific information about the environment affected that an Applicant shall provide or that the NRC staff must include in its NEPA document. Regarding water quality, NUREG–1748 states that the SEIS should include a description of site-specific and regional data on the characteristics of surface- and ground-water quality in sufficient detail to provide the necessary data for other reviews dealing with water resources. The Applicant included information regarding the affected environment, including an analysis of the site-specific surface- and ground-water quality, in its license application for the proposed Ross Project. The NRC staff reviewed this information, found it acceptable, and then the staff used it to prepare SEIS Section 3, "Affected Environment," and Section 4, "Environmental Impacts and Mitigation Measures." An analysis of the environmental impacts to ground-water quality due to excursions and an analysis of the impacts following the aquifer-restoration phase are provided in Section 4 of this SEIS.*

According to 10 CFR Part 40, Appendix A, Criterion 5B(5), at the point of compliance, the concentration of a hazardous constituent must not exceed 1) the Commission approved background [in this SEIS, "post-licensing, pre-operational"] concentration of that constituent in the ground water; 2) the respective value given in the table in paragraph 5C if the constituent is listed in the table and if the background [in this SEIS, "post-licensing, pre-operational"] level of the constituent is below the value listed; or 3) an ACL established by the Commission. The commenter finds that the SEIS fails to disclose post-licensing, pre-operational water-quality values because the commenter improperly equates the 10 CFR Part 40, Appendix A, statement "Commission approved background [in this SEIS, "post-licensing, pre-operational"] concentrations of hazardous constituents in the ground water at the points of compliance" to the "description of the environment affected" and the "description of the site-specific data on the characteristics of ground-water quality" that are to be included in the NEPA document per 10 CFR Part 51 and NUREG–1748, respectively (NRC, 2003b). These concepts are not equivalent. The Commission-approved concentrations would be determined following the Applicant's submission of a hydrologic-test data package to the NRC for approval, which would occur after the Applicant is granted a license but before uranium-recovery operation begins. The 10 CFR Part 51 "description of the environment affected" and the NUREG–1748 "description of the site-specific data on the characteristics of ground-water quality" are information that must be reasonably obtained prior to the NRC's granting of a license as it is information that the NRC staff must use to develop the NEPA document, which must occur prior to the NRC's granting the license.

The commenter states that, unless the SEIS discloses the 10 CFR Part 40, Appendix A, Criterion 5B(5) Commission-approved concentrations of hazardous constituents measured at the point of compliance within the Ross Project area, the SEIS cannot fully disclose or analyze the environmental impacts to ground water during an excursion or following aquifer restoration. The NRC staff does not agree with this assertion. In the case that the Applicant is not able to restore the ground-water constituents to the 5B(5) concentrations or in the case of an excursion, the NRC staff's knowledge of what these 5B(5) concentrations are would not allow the NRC staff to predict exactly how the concentrations would change or how ground-water quality as a whole would change any better than the NRC staff can predict this without having these 5B(5) concentrations. In the case that the Applicant is able to restore the ground-water's hazardous-constituent concentrations to those of 5B(5), then, as stated in Section 4 of the SEIS, the site-specific ground-water quality would not be expected to change from the quality presented in Section 3 of the SEIS. Therefore, notwithstanding the fact that these point-of-compliance, specific hazardous-constituent concentrations would not be Commission approved until after a license is granted and thus cannot be legally obtained by the Applicant prior to the granting of the license, the collection of this information is neither required by 10 CFR Part 51 nor would it affect the water-quality-impacts analysis presented in the SEIS. Therefore, no changes were made to the SEIS beyond the information provided in this response.

Comment: RP041-018

The commenter stated that, as the comments regarding the GEIS and the Ross Project DSEIS that are presented in the comment document which accompanied this commenter's comments demonstrated, the GEIS and the DSEIS were inadequate pursuant to NEPA, the NRC's regulations implementing NEPA (10 CFR Part 51), and the CEQ regulations implementing NEPA. Therefore, the commenter stated that NRC must withdraw the Ross Project DSEIS, significantly amend it to address the deficiencies described in the comments, and reissue the DSEIS for additional public comment. The commenter also noted that, during these efforts, the NRC should not rely on the GEIS for any site-specific analyses.

Response: *The NRC disagrees with the commenter and believes that the SEIS for the Ross Project now adequately addresses all public comments and does not need to be reissued for additional public comment. For further information on how the SEIS tiers from the GEIS, please refer to Section B.5.4.2 of this Appendix B. The NRC staff has prepared this Ross Project SEIS consistent with its regulations under 10 CFR Part 51 that implement NEPA and its guidance for conducting environmental reviews as found in NUREG–1748 (NRC, 2003b). Pursuant to 10 CFR Part 51.73, the NRC staff issued the DSEIS for the Ross Project for public comment on March 29, 2013 (78 FR 19330). The comment period for the document closed on May 13, 2013. As discussed in Section B.3 of this Appendix B, 1,120 public comments from 43 comment documents were received on the DSEIS, among which were the comments presented by the commenter. Consistent with 10 CFR Part 51.91(a), the NRC considered and responded to all comments received. No changes were made to the SEIS beyond the information provided in this response.*

B.5.6.1.5 Miscellaneous NRC Policies and Practices

Comment: RP024-054

Due to the fact that the SER was finalized in February 2013, and the NRC issued a Draft Source and Byproduct Materials License for the Ross Project, the commenter stated that the following

caveat in the DSEIS is unnecessary: "Unless safety issues mandate otherwise, the preliminary NRC staff recommendation…" (NRC, 2014b).

Response: *The text quoted by the commenter is from DSEIS Section 2.4, "Preliminary Recommendation." The full quote is as follows: "Unless safety issues mandate otherwise, the preliminary NRC staff recommendation to the Commission* related to the environmental aspects of the Proposed Action *is that a source and byproduct materials license for the Proposed Action be issued as requested" [emphasis added]. The conclusion provided in this statement is related only to the environmental aspects of the Proposed Action. Thus, the caveat is necessary and no changes were made to the SEIS beyond the information contained in this response.*

Comment: RP024-080

The commenter suggested that DSEIS Table 1.2, "Environmental Approvals for the Proposed Ross Project" be revised to remove "Permit application to construct holding (storage) ponds (40 CFR 61.07)" because, as the commenter stated, this permit was not discussed in the license application and is not relevant to any ponds at the proposed Ross Project.

Response: *DSEIS Table 1.2, "Environmental Approvals for the Proposed Ross Project" was developed based upon the information submitted by the Applicant in its ER Table 1.6-1. During preparation of this FSEIS, the NRC staff requested that the Applicant provide an updated Table 1.6-1. FSEIS Table 1.2 has been revised to reflect the more recent information provided by the Applicant.*

Comment: RP035-012

The commenter recommended that the FSEIS discuss the applicability of Subpart W of 40 CFR Part 61 and provide a detailed description of surface-impoundment design and size. The commenter also highlighted the fact that the U.S. Environmental Protection Agency (EPA) is currently considering revisions to 40 CFR Part 61, Subpart W, that could result in changes to the requirements in 40 CFR Part 61.

Response: *The EPA asserts that 40 CFR Part 61, Subpart W, applies to water-storage surface impoundments. The authority for EPA's 40 CFR Part 61 is derived from the* Clean Air Act *(CAA), over which the NRC does not have jurisdiction. To be in compliance with 40 CFR Part 61, Subpart W, new facilities would have to meet specific effluent limits, size limits, and liner-construction designs as specified in 40 CFR Part 61, Subparts A and W. Specifically, the Applicant must submit an application to the EPA for the construction of the surface impoundments pursuant to 40 CFR Part 61.07 and must monitor radon effluents during impoundment operation to demonstrate compliance pursuant to 40 CFR Part 61.253. These requirements, as applicable, would be satisfied by the Applicant in its design of the Ross Project surface impoundments. SEIS Section 2.1.1.1 includes the description of the currently proposed surface-impoundment design and size as well as references to the Applicant's license application, which contains detailed design descriptions and drawings (Strata, 2011b). Regarding the potential revisions to 40 CFR Part 61, Subpart W, the NRC reviews the license applications it receives vis-à-vis the regulations in place at the time of review. No changes were made to the SEIS beyond the information provided in this response.*

B.5.6.2 References

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." NUREG–1437. Washington, DC: USNRC, Office of Nuclear Reactor Regulation. May 1996a. ADAMS Accession No. ML13106A241.

(US)NRC. "Staff Technical Position, Alternate Concentration Limits for Title II Uranium Mills." Washington, DC: USNRC. 1996b. ADAMS Accession No. ML091420242.

(US)NRC. "Standard Review Plan for In Situ Leach Uranium Extraction License Applications, Final Report." NUREG–1569. Washington, DC: USNRC. 2003a. ADAMS Accession No. ML032250177.

(US)NRC. "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." NUREG–1748. Washington, DC: USNRC. 2003b. ADAMS Accession No. ML032450279.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "Staff Assessment of Ground Water Impacts from Previously Licensed In-Situ Uranium Recovery Facilities." Memorandum from C. Miller to Chairman Jaczko, et al. Washington, DC: USNRC. July 10, 2009d. ADAMS Accession No. ML091770385.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

WDEQ/LQD (Wyoming Department of Environmental Quality/Land Quality Division). "Noncoal In Situ Mining," *Rules and Regulations*, Chapter 11. Cheyenne, WY: WDEQ/LQD. 2005.

B.5.7 Public Involvement

Comment: RP024-072

The commenter suggested that a statement be added to the FSEIS to indicate that a public hearing has been granted.

Response: *The commenter is correct that a hearing has been granted. Section 1.4.2 of the FSEIS has been revised to provide additional details about the ongoing administrative hearing-related activities.*

B.5.8 Federal and State Agencies

B.5.8.1 Clarification of Other Federal and State Regulations and Practices

Comment: RP024-088

The commenter suggested that the FSEIS include a definition of the term “commenting agency.”

Response: *A commenting agency is a public agency with jurisdiction over a particular natural resource, but is neither a lead agency nor a responsible party. The term “commenting agency” has also been used by the NRC and U.S. National Park Service (NPS) at Devils Tower National Monument (Devils Tower or Bear Lodge) to indicate that the NPS at Devils Tower would be notified of the availability of the DSEIS, provided a copy, and provided an opportunity to comment during the public-comment period. Section 1.7.3.2 of the FSEIS has been revised to clarify the role of the NPS as a commenting agency.*

Comment: RP041-015

The commenter stated that the DSEIS did not meet the BLM's requirements for NEPA analysis. The commenter noted that, while the DSEIS contained a purpose and need statement from the BLM, no other mention of the BLM's approval process for the Ross Project is included in the document. Additionally, although Section 1.7.3.1 of the DSEIS says that the NRC coordinated with the BLM, it does not appear to the commenter as though the DSEIS was jointly prepared by both Federal agencies. The commenter also noted that no one from the BLM is listed as a preparer of the SEIS in Section 9 of the DSEIS. The commenter stated that the SEIS would need to comply with CEQ’s NEPA regulations if the SEIS is intended to meet the BLM's NEPA requirements. The commenter asked if the SEIS was indeed a joint document and, if not, then what NEPA analysis the BLM would conduct and why the NRC and BLM chose to divide the BLM’s analysis from the NRC’s analysis, which, the commenter stated, prevented either agency from conducting a true, comprehensive “hard look” of the environmental impacts related to the Ross Project.

Response: *The SEIS has been prepared by the NRC staff with the BLM as a cooperating agency and, as such, BLM staff participation is documented in the Administrative Record and does not need to be documented in the SEIS. The NRC, as the lead agency, has the responsibility to prepare the document to the level of compliance with NEPA that it is required by its policy and guidance. The BLM has regulatory policy and guidance that it must abide by as well. The BLM is aware of the differences between both agencies’ requirements and, as a cooperating agency, is working with the NRC staff to ensure that both agencies’ requirements*

are met. Prior to the completion of the FSEIS, the BLM will evaluate the document to confirm that the FSEIS meets the BLM's NEPA requirements. If not, then the BLM will use the appropriate NEPA process to tier to and/or supplement the SEIS to address BLM's specific requirements. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP024-107; RP024-211; RP024-367

The commenter suggested that the NRC staff modify any statement throughout the DSEIS which indicated that, "No radioactive materials would be present at the Ross Project during preconstruction activities." The commenter indicated that all similar statements in DSEIS Sections 2 and 3 should include a discussion of technologically enhanced naturally occurring radioactive material (TENORM) drillhole cuttings as well as muds and fluids associated with well construction and completion activities.

Response: *The NRC staff agrees with the recommendation and has revised FSEIS Section 2.1.1.1 to include a discussion of TENORM drillhole cuttings associated with well-construction and well-completion activities as well as fluids such as drilling muds and waste water. FSEIS Sections 3.13.1 and 3.13.2 were also revised as a result of these comments to achieve more clarity in the respective texts.*

B.5.9 ISR Process Description

B.5.9.1 Wellfields

Comment: RP032-013

The commenter requested addditional information regarding the final areal extent of the installed wellfields.

Response: *The final areal extent of the wellfields cannot exceed the boundary of the exempted aquifer. The individual boundaries of a particular wellfield, and the configuration of injection and recovery wells therein, would be determined by the Applicant after receiving its Source and Byproduct Materials License from the NRC (NRC, 2014b). Based upon a wellfield's unique boundaries, the Applicant would install monitoring wells, and it would then collect post-licensing, pre-operational water-quality data from these monitoring wells. (See NRC's responses to Comment Nos. RP032-003 and RP041-012 for information on the size of the exempted aquifer underlying the Ross Project area and the NRC's responses to Comment Nos. RP032-019 and RP032-031 for information regarding wellfield configurations.) No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-014

The commenter asked for additional information on the total number of wells planned and/or likely to be located within a floodplain.

Response: *The total number of wells expected to be located within a floodplain of the Project area is unknown. However, the floodplain, as shown in SEIS Figure 3.13, would be only a small portion of the total Ross Project area. Consequently, the floodplain itself would be expected to contain only a commensurately small percentage of the recovery, injection, and/or monitoring*

wells proposed for the Project area. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-022

The commenter noted that Figure 2.4 in DSEIS Section 2.1.1 indicates the location of a large number of overlapping wellfield perimeters representing potentially thousands of Underground Injection Control (UIC) Class III Wells within the Ross Project area. The commenter asked that the FSEIS include tables and map(s) showing the number and locations of all prospective UIC Class I or Class III mining wells (or wellfields if the specific well locations are unknown) and the targeted aquifer(s) that would be part of the Lance District development. The commenter requested that the Class III wells or wellfields discussed in the tables or map(s) be classified as currently proposed for the Ross Project, targeted by the Applicant for future development in the Lance District, or other reasonably foreseeable ISR projects in the Lance District. The commenter requested that the FSEIS include a scientifically and technically adequate discussion of the cumulative environmental impacts that the UIC mining wells for uranium extraction could have on the NEPA-defined region of interest surrounding the Ross Project, including the adverse impacts of all other reasonably foreseeable UIC Class III mining wells and UIC Class I disposal well activities in the same NEPA region of interest.

Response: *A map or table showing the location of all UIC Class I and Class III wells proposed to be developed by the Applicant in association with development of the proposed Ross Project and potential future satellite areas within the Lance District cannot be provided in the SEIS as this information is not currently available. Please see the NRC staff's response to Comment RP032-021 for a discussion of the Ross Project UIC Class I wells. The NRC notes that SEIS Figure 2.4 is a map showing the locations of the proposed Ross Project wellfields. Although a similar figure showing the locations of the wellfields within the potential Lance District satellite areas is not available, SEIS Figure 2.2 does show the locations of the potential satellites within which the wellfields would be located.*

SEIS Section 4.5 provides a detailed analysis of the impacts to water quality that could result from the various phases of the Ross Project due to the installation of wellfields. Impacts to surface water due to the discharge of well-drilling fluids from the installation, development, and testing of wells are analyzed in this section. Water-quality and water-quantity impacts on ground water due to wells are discussed in this SEIS section. In addition, the impacts resulting from vegetation and soil disturbance associated with wellfield installation and impacts to wetlands are also discussed in this SEIS Section. Finally, SEIS Section 4.5 provides an analysis of the impacts to water quality due to the plugging and abandoning of wells. SEIS Section 5 provides additional analyses in Sections 5.6 and 5.7 regarding the cumulative impacts to geology and soils as well as water quality due to the wells. Therefore, no changes were made to the SEIS beyond the information provided in this response.

Comment: RP035-022

The commenter referenced a sentence in DSEIS Section 2.1.1.1, "The Applicant proposes that wells configured in a line-drive pattern would likely require increased aquifer restoration efforts; therefore, the Applicant would make limited use of line-drive patterns. Where it is not possible to avoid the use of line-drive patterns, the Applicant would perform additional computer modeling to determine the most efficient well spacing so as to facilitate aquifer restoration." The

commenter recommended that the NRC explain how the line-drive well pattern is designed and why aquifer-restoration efforts employing this pattern would enhance mitigation measures.

Response: *A line-drive pattern was described by the Applicant in its ER as the arrangement of injection and recovery wells that would be used on narrow ore bodies within the ore zone. This type of pattern is generally a row that is one or two wells wide, as illustrated in Figure 1.2-11 of the ER (Strata, 2011a). As noted in DSEIS Section 2.1.1.1, a line-drive pattern would likely require increased aquifer-restoration effort; this effort could increase because the liklihood of lixiviant outside the recovery wells could be greater in a line-drive arrangement than with 5-spot or 7-spot patterns. Therefore, the Applicant committed to only limited use of the line-drive pattern. Where it would not be possible to avoid the use of line-drive patterns, the Applicant would perform additional computer modeling to determine the most efficient well spacing so as to facilitate subsequent aquifer restoration. Information about line-drive wellfield patterns' potentially requiring more aquifer-restoration effort compared to other wellfield patterns has been added to Section 2.1.1.1 of the FSEIS.*

B.5.9.2 Uranium-Recovery Operation

Comment: RP024-100

The commenter disagreed with the statement in DSEIS Section 2.1.1, "In situ pressures in ISR injection wells are only slightly above the in situ aquifer pressure." The commenter noted that the license application indicates that the maximum injection pressure would be less than the respective formation's fracture pressure (Strata, 2011b). In addition, the UIC Class III Permit requires that the injection pressure be maintained below the respective formation's fracture pressure.

Response: *The NRC agrees with the commenter's statement. It has revised the text in FSEIS Section 2.1.1, replacing the phrase, "only slightly above the in situ aquifer pressure" with "maintained at less than the fracture pressures of the formations in which ISR is occurring."*

Comment: RP024-112

The commenter suggested that the NRC revise DSEIS Section 2.1.1.1 in order to make clear that the chemical-storage area at the Ross Project would have two distinct sections (one inside the CPP and one outside). The commenter also suggested including a discussion of the primary controls associated with the chemical-storage area.

Response: *The NRC staff does not agree that further clarification is required in SEIS Section 2.1.1.1, as the text is clear regarding division of the chemical-storage area into two sections as well as the primary controls for containment in the event of accidental releases or spills. Section 2.1.1.1 in the SEIS contains the following statement: "The chemical-storage area would be constructed with secondary containment, which would consist of a concrete berm as part of the floor area that would be able to contain at least 110 percent of the volume of the largest tank (Strata, 2011b). The space would be divided into two areas, one inside the CPP and one outside." Thus, the SEIS does explain that there is a supplemental secondary containment that would ensure accidental releases or other spills would be contained and not allowed to spread within the storage area. Moreover, the SEIS explains that, with respect to chemical-storage tanks, each would be clearly labeled to identify the contents. No changes were made to the SEIS beyond the information provided in this response*.

Comment: RP032-012

The commenter stated that the DSEIS provides incomplete and misleading information in DSEIS Section 2.1.1.1, Ross Project Facility, where it is noted that "The excess capacity in the yellowcake production circuit would allow processing of loaded ion-exchange (IX) resin brought to the Ross Project from other ISR or water treatment facilities." The commenter contended that loaded resin brought to the Ross Project's CPP would first originate in the Applicant's own potential satellite areas in the Lance District, and not from other uranium-recovery or water-treatment facilities. Also, the commenter asserted that any excess capacity would likely be allocated, first, to additional uranium-bearing lixiviant arriving by pipeline at the Ross Project's CPP from the Applicant's own contiguous wellfield operations.

Response: *The NRC staff does not agree that the information provided in the DSEIS Section 2.1.1.1, Ross Project Facility, regarding the Applicant's intended use of the excess capacity in the yellowcake-production circuit is incomplete or misleading. The SEIS does discuss clearly the Applicant's proposal to process material from its own potential satellites. For example, it is stated in the SEIS, based upon the Applicant's own ER, that "The Applicant proposes to construct and operate a single facility to serve the Ross Project as well as other potential ISR satellites (i.e., wellfields) within the Lance District. It could also process uranium-loaded resin from other ISR and water-treatment operations, which would be trucked into the facility" (Strata, 2011a). However, the NRC staff has revised the statement in FSEIS Section 2.1.1.1 called out by the commenter, and it now clarifies that the IX resin could come to the Ross Project's CPP from the Applicant's own satellites if any were to be licensed.*

Comment: RP032-026

The commenter indicated that the DSEIS Section 2.1.1.2 stated, "The excess water, referred to as 'production bleed,' is a byproduct material that must be properly managed and disposed. For the Ross Project, the Applicant proposes a production-bleed range from 0.5 percent to 2 percent, and averaging 1.25 percent of the injection volume." The commenter asked that the NRC provide a NEPA-compliant quantification and sensitivity analysis of the environmental consequences in the event the required bleed range to prevent excursions exceeds that proposed by the Applicant by technically plausible margins and/or the average bleed rate exceeds 1.25 percent of the injection volume. The commenter asked for the following information: 1) the maximum observed peak bleed rate and maximum bleed volume for an ISR wellfield to date in the Nebraska-South Dakota-Wyoming Uranium Milling Region (NSDWUMR); 2) the maximum observed average bleed rate and total bleed volume for an ISR wellfield in the NSDWUMR; 3) the proposed and/or estimated total "injection volume" for the Ross Project, and the technically supported range of uncertainty that surrounds this number; 4) the proposed or estimated total injection volume for potential future ISR satellite efforts in the Lance District and a technically supported range of uncertainty that surrounds this number; and 5) a description of the relationship between expected and actual wellfield bleed rates.

In addition, the commenter asked for a discussion on higher than expected bleed rates and the maximum safe capacity of the reverse-osmosis (RO) circuit in the Ross Project CPP, the capacity of planned surface impoundments, the capacity of planned storage impoundments, and the permitted capacities of the UIC Class I deep-injection wells. The commenter asked for the bleed rate and injection volumes at which the capacity of the RO circuit would be exceeded; where excess bleed would be stored until it could be processed in the CPP; and what temporary waste-storage capacity would be available to deal with higher-than-expected bleed production.

Response: *The NRC did not analyze a scenario in which the production bleed exceeded that presented in the Proposed Action. When preparing an SEIS, the NRC staff takes a "hard look" at the environmental impacts of the particular Proposed Action. The "hard look" standard does not, however, require that the Staff address every conceivable environmental impact in an environmental-review document (e.g., this SEIS). For example, the NRC staff need not discuss remote and highly speculative consequences. To the contrary, a "hard look" under NEPA requires only that the NRC staff provide "[a] reasonably thorough discussion of the significant aspects of the probable environmental consequences." Further, analysis of the uncertainty of operating parameters is not required for the SEIS. As the Commission has explained, "NEPA does not call for certainty or precision, but an estimate of anticipated (not unduly speculative) impacts." The proper inquiry under the "hard look" standard is not whether an effect is "theoretically possible," but whether it is "reasonably probable that the situation will occur."*

The requests by the commenter for: 1) expected and observed or actual maximum and average bleed rates and volumes; and 2) a description of the relationship between expected and actual wellfield bleed rates associated with licensed ISR wellfields within the NSDWUMR are outside the scope of this Ross Project SEIS.

As provided in FSEIS Figures 4.2 and 4.3, the anticipated injection rates would range from 18,500 – 28,300 L/min [4,900 – 7,460 gal/min] with a typical rate of 28,030 L/min [7,406 gal/min]. NRC staff's impact analysis does not require the total injection volume. As presented in SEIS Section 4.5.1, the impacts to water quantity were determined by the results projected from the ground-water drawdown model which was based upon the estimated withdrawal rates and bleed percentages. The Applicant's license application, the pumping tests, and the hydrologic model support the principle that the hydraulic properties at the Ross Project area are amenable to the injection, withdrawal, and bleed rates within the range of parameters proposed by the Applicant (Strata, 2011b). The hydrologic tests required for the hydrologic-test data package which would be in turn required by License Condition No. 10.13 would refine and optimize the bleed rates within the proposed range (0.5 to 2 percent) for each proposed wellfield (NRC, 2014b).

Information on injection rates and the range of uncertainty that could be proposed for potential satellite areas in the Lance District is not available. Please see the NRC's responses to Comment Nos. RP032-002, RP032-067, and RP041-009, which describe the environmental review process that the NRC staff would follow if Strata were to submit a license amendment application to the NRC to expand its operation into any of the Lance District satellite areas.

A discussion of higher than expected bleed rates that is requested by the commenter is outside the scope of this SEIS. As described in the first paragraph of this response, NEPA does not require analysis of the uncertainty of operating parameters but only the analysis of reasonably probable situations. Responding to the request for the maximum safe operating capacity of the RO circuit proposed for the Ross Project CPP is also outside the scope of this SEIS. As described in Sections 4.5.1.2 and 4.5.1.3, the capacity of the proposed CPP would be adequate to support the anticipated production of water recovered from the Project wellfields. In response to Comment No. RP035-006, supplemental figures that depict the Project's water balances (i.e., the rates of injection, recovery, bleed, and disposal) produced during different Project processing phases have been added to the FSEIS Section 4.5.1 (i.e., Figures 4.2, 4.3, and 4.4). The rate of water recovery from the wellfields would depend upon the rate of injection, which is a variable that can be controlled by operations.

The bleed-water volume would be stored in the surface impoundments described in SEIS Sections 2.1.1.1, 4.4.1.2, and 4.5.1.2. The surface impoundments would provide reserve capacity in the event that unforeseen operating conditions generate more than anticipated liquid byproduct material. Condition No. 10.8 in the Draft Source and Byproduct Materials License for the Ross Project indicates that the surface impoundments be used as described by the Applicant in its license application (NRC, 2014b). This License Condition would limit the operating capacity of each impoundment to be one-third to one-half of the total capacity in order to preserve reserve capacity at all times (Strata, 2011b). The capacity of the UIC Class I deep-injection wells is discussed in the response to Comment Nos. RP017-011 and RP032-055. Storage tanks would provide storage at the location of the deep-injection wells. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-027

The commenter referenced DSEIS Section 2.1.1.2 statement, "The Applicant proposes a maximum injection pressure ... less than the pressure rating for operation of the pipes and other equipment (Strata, 2011b)." The commenter requested information on the pressure rating for the operation of the pipelines and other equipment to be used in the injection and recovery circuits of the Ross Project and the potential future uranium-recovery satellite areas in the Lance District. In addition, the commenter noted the statement in DSEIS Section 2.1.1.2, "... pressure requirements within a specific wellfield generally tend to increase with time." The commenter asked for a discussion of the following: 1) wellfield injection-pressure requirements over time, including the range of expected and maximum plausible values for minimum, maximum, and average wellfield-injection pressure over the life of the wellfield, and 2) the relationship, if any, between injection pressure, wellfield pressure, wellfield balance, and the likelihood of excursions. The commenter asked if the likelihood of excursions increases with greater injection pressures and if the available regulatory record of excursions at uranium-recovery facilities shows any correlation between injection pressure and the likelihood of excursions.

Response: *The pressure rating for the pipes and other equipment used in the injection and recovery circuits requested by the commenter is not available nor is that information necessary for the respective impact assessment in the SEIS. The important point is that the Applicant commits to maximum injection pressures that are less than the pressure ratings of the pipes and associated equipment, which ensures the integrity of the pipes and equipment. In addition, the maximum injection pressures would be less than the pressures necessary to cause fractures in the confining layers of rock. As described in SEIS Section 2.1.1, the Wyoming Department of Environmental Quality (WDEQ) Permit to Mine includes approval for the Applicant to operate the UIC Class III injection wells associated with uranium recovery. The WDEQ Permit to Mine imposes standards on the pressures in the Class III wells in a wellfield per Wyoming's* Rules and Regulations*, Chapter 11, "In-Situ Mining" (WDEQ/LQD, 2005). The approved WDEQ Permit to Mine would include maximum and average injection volumes and/or pressures necessary to ensure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any unauthorized zone, and that formation fluids are not displaced into any unauthorized zone.*

Operating requirements of the WDEQ Permit to Mine specifies that, at a minimum, the fluid and fracture pressures of the production zone be calculated to ensure that the pressure in the production zone during injection does not initiate new fractures or propagate existing fractures. The WDEQ/LQD Rules Chapter 11, NonCoal In Situ Mining Section 11, specifies that "In no

case will injection pressure initiate fractures in the confining zone, if confinement is present, or cause the migration of injection or formation fluids into an unauthorized zone." Although pressures could increase over time, pressures would not exceed the maximum allowable injection pressures. Condition No. 10.14 of the Draft Source and Byproduct Materials License for the Ross Project indicates that during wellfield operations, injection pressures are not to exceed the maximum operating pressures as specified in the Applicant's license application (NRC, 2014b). Information has been added to FSEIS Section 2.1.1 to explicitly describe the requirements within the WDEQ's Permit to Mine and the specifications in Draft License Condition No. 10.14 that pertain to injection pressures.

NRC was unable to locate information on the relationship of injection pressures and excursions. However, the NRC does not agree that there is a relationship between injection pressures and excursions. Within an aquifer with porosity and permeability sufficient for the ISR process, injection pressures would dissipate within a short distance from the injection well; whereas, excursions are influenced by ground-water flow patterns at the perimeter of the wellfields.

Information on the pressure ratings of the pipes and equipment that could be proposed for potential satellite areas in the Lance District is not available. Please see the NRC's responses to Comment Nos. RP032-002, RP032-067, and RP041-009, which describe the environmental-review process that the NRC staff would follow if Strata were to submit a license-amendment application to the Commission to expand its operation into any of the Lance District satellite areas.

Comment: RP032-028

The commenter referenced DSEIS Section 2.1.1.2 statement, "The Applicant suggests that, in order to maintain flow rates and wellfield balance, some wellfields would require flexibility in their allowable injection pressure." The commenter requested information on the following: 1) The practical meaning of the phrase "flexibility in their allowable injection pressure." 2) The methodology through which "flexibility" would be provided. 3) The purpose of the NRC's allowing flexibility. The commenter asked if the flexibility would permit the Applicant's proposed maximum injection pressure to be exceeded and, if so, by how much and for how long. Similarly, the commenter asked if the likelihood and/or potential severity of leaks would be increased.

Response: *As described in the NRC staff's response to Comment No. RP032-027, the maximum allowable injection pressure is the limit that would be specified in the Source and Byproduct Materials License for the Ross Project as well as in the WDEQ's Permit to Mine. This maximum injection pressure cannot be exceeded if the Applicant is to remain in compliance with the License. Such compliance would be monitored by the requirement that injection pressures and flow rates be measured and recorded daily by the inline computer system and/or by a wellfield operator according to Condition No. 10.14 in the Ross Project's Draft License. In the context of the subject statement, "flexibility" refers to the Applicant's using less pressure in wellfields that are of lesser depth, as stated in SEIS Section 2.1.1.2. The purpose of NRC allowing flexibility would be to allow the Applicant to operate in the most efficient manner. In no case would such flexibility allow the Applicant's licensed maximum injection pressure to be exceeded. As described in the response to Comment No. RP032-027, there is no relationship between injection at pressures below the maximum allowed and leaks and excursions. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-035

The commenter noted that DSEIS Section 2.1.1.2 states, "The Applicant estimates that 0.1 – 2 kg [~ 2 – 4 lb] of V_20_5 would be produced for every 1 kg [~ 2 lb] of U_30_8." The commenter then asked what accounts for the variability in the estimated yield of co-produced vanadium?

Response: *The concentrations of metals within a given ore varies naturally, as determined by the geologic processes that formed the ore (Rose et al., 1979). No changes were made to the SEIS beyond the information provided in this response.*

B.5.9.3 Decommissioning

Comment: RP024-105

The commenter referred to the statements in DSEIS Section 2.1.1:

> In Section 2 of the GEIS, the four stages in the life of an ISR facility are described: 1) construction, 2) operation, 3) aquifer restoration, and 4) decommissioning (NRC, 2009). The decommissioning phase would include facility decontamination, dismantling, demolition, and disposal as well as site reclamation and restoration. Although NRC recognizes that these four phases could be performed concurrently, and in practice early wellfields would undergo aquifer restoration while other wellfields are being installed, the GEIS determined that describing the ISR process in terms of these stages aids in the discussion of the ISR process and in the evaluation of potential environmental impacts from an ISR facility.

Based upon the subject statements in DSEIS Section 2.1.1, the commenter stated that the NRC's description of "decommissioning" was inconsistent with its application of 10 CFR Part 40.42, "Timeliness in Decommissioning" regulation to uranium-recovery wellfields. The commenter noted that nowhere in the DSEIS's description did it reference ground-water restoration, aquifer-stabilization monitoring, and wellfield decommissioning, but rather the SEIS merely stated "facility" decommissioning. The commenter suggested that some uranium-recovery facilities decommission wellfields after aquifer restoration has been completed, and some after all facility operations are completed. Therefore, this regulation would apply to uranium-recovery wellfields and the FSEIS's description should reflect that fact.

Response: *According to the Commission decision regarding Hydro Resources, Inc. (NRC, 2000b), NRC staff is required to review a decommissioning plan prior to issuing a license. NUREG–1569 contains NRC staff guidance for reviewing decommissioning plans (NRC, 2003a). NRC addresses the decommissioning/restoration activities to be included in the application including ground-water restoration, soils reclamation, building decommissioning, and post-decommissioning surveys. Therefore, the intent of the aforementioned Commission decision and NUREG–1569 is to review a decommissioning plan that addressed full facility build-out for the life of the facility.*

Unlike other facilities, the precise as-built conditions are unknown prior to operations because continued exploration may result in alterations to proposed wellfields. Such alterations affect the required wellfield infrastructure. Therefore, a more detailed decommissioning plan would be required 12 months prior to decommissioning a facility or a portion thereof. This plan would comply with 10 CFR 40.42. With respect to schedule and in accordance with 10 CFR 40.42, the

licensee would be required to complete site decommissioning within two years after approval of the DP or as otherwise specified in the Plan.

As stated in generic letters to licensees dated July 7, 2008 (e.g., NRC, 2008 [ADAMS Accession No. ML081480293]), the timeliness and decommissioning regulations apply to ISRs and under provisions of 10 CFR 40.42(d) for separate outdoor areas, the subsurface ground water restoration of individual wellfields is interpreted as decommissioning; therefore, alternate schedules must be submitted if ground water restoration/decommissioning of the wellfield would require more than two years.

Ground-water restoration of the wellfield aquifer is separate from the decommissioning/reclamation of the surface features at a wellfield including the abandonment of all wells. A licensee is required to receive NRC approval of the wellfield restoration prior to performing decommissioning/reclamation of the surface features. SEIS references to "facility" decommissioning include wellfield decommissioning. Ground-water restoration is discussed in SEIS Sections 2.1.1.3 and 4.5.1.3. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-488

The commenter noted that Condition No. 10.3 of the Draft Source and Byproduct Materials License requires the Applicant to submit a detailed Decommissioning Plan (DP) for NRC staff review and approval at least 12 months prior to initiation of any planned final Ross Project decommissioning (NRC, 2014b). For consistency, the commenter suggested that DSEIS Section 4.6.1.4 be revised to reflect this requirement.

Response: *Although the NRC staff acknowledges the commenter is correct that Condition No. 10.3 in the Draft License (NRC, 2014b) indicates that the Applicant would submit a detailed DP for NRC staff review and approval at least 12 months prior to initiation of any final Ross Project decommissioning, the NRC staff does not find that this information regarding the timing of the DP is particularly relevant to the discussion in SEIS Section 4.6.1.4. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP032-045; RP032-046; RP032-047; RP032-048

The commenter provided several closely related comments:

1) The commenter noted that DSEIS Section 2.1.1.4 stated, "Prior to the Ross Project's facility decontamination, dismantling, and decommissioning, and the Project site's reclamation and restoration, appropriate cleanup criteria for surfaces would need to be established in concert with NRC requirements, and a Ross Project-specific decommissioning plan would need to be accepted by the NRC." The commenter asked what the current NRC requirements are for "appropriate cleanup criteria for surfaces" of uranium-recovery facilities during decommissioning, and the commenter further asked when and how the criteria required for cleanup of surfaces at the Ross Project facility would be determined.

2) The commenter also asked that the NRC provide the earliest and latest dates at which facility decontamination, dismantling, and decommissioning could reasonably be expected to occur based upon the current plans of the Applicant. In particular, the commenter requested

clarification on the timing of the Applicant's submittal of a DP as well as the timing of the NRC's approval of that DP.

3) The commenter also asked if the "Ross Project facility" named above is the same as the "Lance Projects Central Processing Plant (CPP)," described by the Applicant's (i.e., Strata Energy, Inc.'s) parent company, Peninsula Energy, Ltd., in releases to the global investing community. If so, the commenter asked why the CPP is referred to by a different name in the DSEIS.

4) Additionally, the commenter requested a table showing the expected levels of radioactive and chemical contamination before and after decontamination of a typical uranium-recovery facility similar in size to the Ross Project CPP. If the data requested are time dependent, the commenter asked that the NRC indicate how the contamination levels pre- and post-decontamination could vary with a plant's operating history. Finally, the commenter asked what would happen if a contaminated area of the Ross Project could not economically meet the cleanup criteria established in the DP.

Response: *1) As stated in SEIS Section 4.13.1.4, the protection of workers and the public would be ensured through the NRC's approval of a DP and/or a Restoration Action Plan (RAP) as well as through its verification that radiation doses that result from exposures during decommissioning would comply with the NRC's 10 CFR Part 20 limits. The Ross Project area could be released for unrestricted use in conformance with the related conditions of the Source and Byproduct Materials License and the dose criteria for unrestricted release in 10 CFR Part 40, Appendix A. The criteria in 10 CFR Part 40, Appendix A, limit the dose from radiological contamination that may exist at the Ross Project, after decommissioning is complete, to levels that are sufficiently low to protect public health and safety.*

2) License Condition No. 10.3 of the Draft License indicates that the Applicant submit a detailed DP to the NRC staff for review and approval at least 12 months prior to initiation of any final Ross Project decontamination, dismantling, and/or decommissioning of Project areas and structures. A Draft RAP for the Project area was submitted by the Applicant in its Technical Report *(TR) (see Addendum 6.1-A in Strata, 2011b). The DP would represent the as-built conditions at the Ross Project. The primary steps involved in decommissioning an ISR facility are discussed in Section 2.6 of the GEIS.*

As shown in SEIS Figure 2.6, the Applicant has estimated that the decommissioning of the Ross Project could begin between four and six years after regulatory approval of the Ross Project, if the Ross Project were not expanded into the Lance District. If the Ross Project were to be expanded into the Lance District through future license amendments, then, as shown in SEIS Figure 2.6, the Applicant has estimated that decommissioning of the facility components (e.g., CPP, surface impoundments, and so forth) could begin between six and eight years after regulatory approval of the Ross Project. As stated in the GEIS, Section 2.6, unless otherwise acknowledged by the NRC, licensees are required under 10 CFR Part 40.42 to complete decommissioning within two years from the time the DP has been approved.

3) The Ross Project facility or CPP is the same facility the commenter refers to as the Lance Project CPP. The term "Ross Project facility" is used in this SEIS because the license application that was submitted to the NRC, and the Proposed Action discussed in this SEIS, is for the NRC to authorize the Applicant to construct and operate an uranium-recovery facility and

wellfields at the Ross Project area. The term "Ross Project facility" is consistent with the license application, the NRC staff's SER, and the Draft License (NRC, 2014a; NRC, 2014b).

4) SEIS Section 4.13.1 discusses the radiological and nonradiological impacts during Ross Project throughout its lifecycle. As stated in SEIS Section 4.13.1.2, GEIS Sections 4.4.11.2.1 and 4.4.11.2.4 presented historical data for ISR facilities, and the GEIS was used in the development of this SEIS. This SEIS has concluded in Section 4.13.1.2 that the potential radiation doses to occupationally exposed workers and members of the public during normal operations would be SMALL. Calculated radiation doses from the releases of radioactive materials to the environment from the Ross Project are very small fractions of the limits in 10 CFR Part 20, which have been established by the NRC for the protection of public health and safety. In addition, the Applicant is required to implement an NRC-approved radiation protection program to protect occupational workers and ensure that radiological doses are as low as reasonably achievable (ALARA). The Applicant's proposed radiation protection program would include implementation of management controls, engineering controls, radiation-safety training, radon monitoring and sampling, and audit programs. The types and quantities of chemicals (hazardous and nonhazardous) proposed for use at the Ross Project would be consistent with those evaluated in the GEIS. In addition, the Applicant proposed to implement the occupational health and safety protection plans presented for typical ISR facilities in the GEIS and to comply with the requirements of regulations governing the use and storage of chemicals. Therefore, the NRC staff concluded that the nonradiological impacts to public and occupational health and safety during normal operations of the Proposed Action would be SMALL. The NRC's response to Comment No. RP032-051 contains additional information regarding radiation-dose limits.

The NRC staff has revised the FSEIS text to elaborate and confirm that appropriate cleanup criteria would be identified as applicable in the Applicant's DP and that the DP would be required of the Applicant if the Ross Project were to be licensed by the NRC. In addition, FSEIS Section 4.13.1.4 now notes that any area, item, or surface that cannot be economically decontaminated, where "economically decontaminated" would be defined by the Applicant, would be shipped to a properly licensed radioactive-waste disposal facility.

Comment: RP032-051

The commenter requested additional information on how an evaluation of potentially contaminated soils would be conducted as part of decommissioning. Specifically, the commenter:

1) Asked whether the soils beneath the surface impoundments would be examined for chemical contamination.

2) Asked if the mud pits would be subject to the same radiation surveys performed on buildings, structures, and equipment, and asked whether mud-pit areas that met cleanup criteria would be suitable for reseeding and livestock grazing.

3) Requested the specific criteria that would be applied to determine the choice between "disposed of appropriately" and "released for unrestricted use."

4) Inquired as to the total hectares [acres] of mud pits and associated land that would be examined for radioactive and/or chemical contamination as well as a description of the size of

the area around and down gradient from the mud pits that would be examined for contamination.

5) Asked that information on the size of potentially impacted soils as a result the Applicant's use of mud pits be provided for the potential satellite areas in the Lance District.

6) Asked for a characterization of any potential risks to livestock, wildlife, food chains, surface water or shallow ground water due to the Applicant's use of mud pits, which would be left in place because they cannot economically be remediated to meet cleanup criteria.

Response:

1) The U.S. Environmental Protection Agency (EPA) regulates most types of hazardous-chemical contamination and/or hazardous wastes. During decommissioning, soil samples could be tested for hazardous constituents, based upon EPA regulations at 40 CFR Part 262, if any EPA-regulated hazardous constituents had been managed in the surface impoundments (i.e., passed through, accumulated in, or stored in).

2). The Applicant would conduct radiation surveys of the onsite mud pits using the same standard, contemporary radiation-survey methods as would be used to survey buildings, structures, and equipment at the Project site. The NRC-approved DP will include the specific details required to effectively decontaminate, dismantle, and decommission the Ross Project, such as survey procedures, sampling locations, analytical parameters, applicable cleanup criteria, and expected waste management techniques (i.e., decontamination of surfaces when possible and/or disposal at an identified disposal facility that is licensed or permitted to accept such wastes).

The Applicant would dismantle, decontaminate, and decommission the Ross Project area so that it can be released without restrictions (i.e., "unrestricted release). Unrestricted release would mean that any land use could be employed at the Project area, including the landowner's reseeding as well as livestock and wildlife grazing.

3) 10 CFR Part 20, Subpart E, 40.36, and 40.42 contain the NRC's basic requirements for decommissioning. The phrases "unrestricted release" and "disposed of appropriately" are not mutually exclusive; they go hand in hand. A site may be released for unrestricted use when survey and/or sample results show that all surfaces, equipment, structures, and environmental media that are to remain at the site are below the applicable cleanup criteria, such as those limits (i.e., radiation doses) specified in 10 CFR Part 20 and other NRC guidance and all articles, surfaces, structures, and/or media that cannot be released without restriction are disposed of appropriately in a licensed disposal facility.

4) The total area to be surveyed by the Applicant upon its entering the decommissioning phase would be identified and discussed in its proposed DP, which would be required to be submitted to the NRC one year before decommissioning commences (NRC, 2014b, License Condition No. 10.3). Thus, detailed information regarding the areal extent subject to surveying and decommissioning activities at each mud pit is not available at this time. However, as stated in GEIS Section 4.4.3.4, any areas potentially impacted by operations would be included in surveys to ensure all areas of elevated soil concentrations are identified and properly cleaned up to comply with NRC regulations at 10 CFR Part 40, Appendix A, Criterion 6-(6) (NRC, 2009b). The EPA issues the regulations that govern the material disposed of in the mud pits,

which is called TENORM; these regulations can be found at 40 CFR Part 192. In addition, the dried pits would be reclaimed and restored by grading and reseeding according to WDEQ/LQD requirements usually within one construction season, as discussed in FSEIS 2.1.1.5, Liquid Effluents.

5) Specific information regarding the areal extent subject to decontamination and decommissioning activities in the Lance District's potential satellite areas is not available and is outside the scope of this SEIS. However, as with the Ross Project, any areas potentially impacted by operations of future Lance District satellites would be included in decommissioning surveys for the satellite facilities to ensure all areas of elevated soil concentrations are identified and properly cleaned up to comply with NRC regulations at 10 CFR Part 40, Appendix A, Criterion 6-(6) (NRC, 2009a).

6) License Condition 9.5 would require that the Applicant maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs for decommissioning and decontamination, if accomplished by a third party, which includes offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration. The surety shall also include the costs associated with all soil and water sampling analyses necessary to confirm the completion of decontamination. FSEIS Sections 2.1.1.4, 2.1.1.5, 3.13.1, and 4.14.1 have been revised to provide more clarity on the decommissioning process, including the management of the mud pits, the procedures for surveys, sampling and analysis protocols, types of wastes, the management of the wastes (e.g., radioactive, hazardous, construction, and other commonly generated wastes such as domestic wastes).

B.5.9.4 Restoration Action Plan

Comment: RP024-210

The commenter requested that the Applicant's RAP be included wherever decommissioning plans are discussed, for example, in DSEIS Section 2.1.1.7.

Response: *The NRC has revised the text of the FSEIS throughout to include references to both a DP and the RAP, including a reference to Addendum 6.1-A of the TR (Strata, 2011b), when one or the other are mentioned.*

B.5.9.5 Monitoring

Comment: RP024-132

The commenter pointed out that DSEIS Section 2.1.1.1 incorrectly stated that the monitoring-well ring around the perimeter of each wellfield would be used to detect "horizontal and vertical excursions." The commenter emphasized that the monitoring wells that would installed in the underlying and overlying aquifers would be used to detect vertical excursions, while the perimeter monitoring-well ring would be used to detect horizontal excursions.

Response: *The NRC staff has revised FSEIS Section 2.1.1.1 as suggested by the commenter. The FSEIS Section 2.1.1.1 text has been clarified; it now states that the Applicant would install a monitoring-well ring around the perimeter of each wellfield for the detection of horizontal*

excursions and that monitoring wells completed in the underlying and overlying aquifers would be used to detect vertical excursions.

Comment: RP024-134

The commenter noted that the statement in DSEIS Section 2.1.1.1, "During uranium-recovery wellfield operation, the Applicant would sample ground water from the wells and compare the analytical values to the NRC-specified baseline constituent concentrations to determine whether an excursion…," is inconsistent with the license application and the Draft Source and Byproduct Materials License (NRC, 2014b). The commenter suggested that the statement be revised to read "compare the analytical values to the respective UCLs [upper control limits]…" so that it is consistent with Condition No. 11.3 of the Draft License.

Response: *The text in Section 2.1.1.1 of the FSEIS has been revised as suggested by the commenter; the text now reads: "The Applicant would compare the analytical ground-water data with the UCLs to determine whether an excursion has occurred."*

Comments: RP024-133; RP024-135; RP024-338

The commenter suggested that the NRC staff make clear in FSEIS Section 2.1.1.1 that pre-licensing, site-characterization data were collected in accordance with the NRC's guidance found in Chapter 2 of NUREG–1569 (as opposed to Chapter 5 of NUREG–1569, which includes guidance on post-licensing, pre-operational baseline data collection).

Response: *The NRC staff agrees that the FSEIS should clarify that pre-licensing, site-characterization data collection has already been performed by the Applicant. The data that were accrued by the analyses of site-characterization samples are presented in SEIS Section 3, "Affected Environment," predominantly in SEIS Sections 3.3, 3.4, and 3.5 ("Geology and Soils," "Water Resources," and "Air Quality," respectively). During its preparation of the SEIS, the NRC staff also focused its evaluation on the pre-licensing, site-characterization data using the guidance provided in NUREG–1748 for environmental-review documents (NRC, 2003b). The NRC also agrees that the FSEIS should clarify that post-licensing, pre-operational data that would be intended to satisfy the requirements of 10 CFR Part 40, Appendix A, have not yet been collected. As a result of this comment, the NRC staff has made that clarification throughout this Appendix B as well as the FSEIS where appropriate.*

Comment: RP024-142

The commenter referred to the text box located in DSEIS Section 2.1.1.1 entitled "What are underground injection control permits?" The commenter asked that the information included in this text box be revised to also include the fact that monitoring and recovery wells would be regulated by Wyoming through WDEQ's Water Quality Division (WQD) *and* its Land Quality Division (LQD). The two WDEQ Divisions cooperate through an MOU that facilitates uranium-recovery oversight by the WDEQ.

Response: *The NRC agrees with the commenter that this information should be included in the subject text box to more fully describe the WDEQ's permitting arrangements. The text box has been revised in FSEIS Section 2.1.1.1; it now reads: "The corresponding monitoring and recovery wells are regulated through the WDEQ by both its Water Quality Division (WQD) and*

Land Quality Division (LQD), which cooperate through a Memorandum of Understanding (MOU) which facilitates in situ uranium-recovery oversight by the WDEQ/LQD."

Comment: RP024-443

The commenter disagreed with the statement in DSEIS Section 4.5.1.2, "The NRC would require an early-warning system of pressure transducers to detect anomalous hydrostatic pressure increases in the perimeter monitoring wells." The commenter requested that this statement be revised for consistency with the license application, where the Applicant commits to measuring water levels in monitoring wells during its semi-monthly sampling campaigns. The commenter highlighted that the Source and Byproduct Materials License would not require pressure transducers to be installed in wells.

Response: *The NRC staff has revised the text in FSEIS Section 4.5.1.2 as the commenter suggested. The statement quoted by the commenter has been replaced with "In addition to sampling the monitoring wells for water-quality parameters, the Applicant commits to measuring water levels during the semi-monthly sampling to detect anomalous hydrostatic pressure increases, which might signal an operational upset (Strata, 2011b)."*

Comment: RP032-016

The commenter referenced the statement in DSEIS Section 2.1.1.1, "After initial testing by the Applicant, the well would be retested at five year intervals," which refers to the mechanical integrity testing (MIT) that would be required of the Applicant. The commenter asked what assurance would be derived from the five-year retesting interval, given that the operating lifetime of the average ISR injection or recovery well is considerably less than five years. The commenter asked that data on the number of wells, as a percentage of the total licensed and operated for in situ injection or recovery in the NSDWUMR region or in Wyoming, that have been retested for mechanical integrity prior to well plugging and abandonment be supplied.

Response: *The data requested by the commenter on retesting of injection and recovery wells in either the NSDWUMR region or in Wyoming for mechanical integrity are not available; the collection of such data by the NRC staff is beyond the scope of this SEIS. The five-year retesting timeframe was established by the EPA in its UIC Program, which is administrated by the WDEQ in Wyoming.*

The MIT committed to by the Applicant in its license application was described in SEIS Section 2.1.1.1. In addition, Condition No. 10.4 of the Draft License would require the Applicant to develop and implement written standard operating procedures (SOPs) prior to the Ross Project's operation for construction and installation activities (NRC, 2014b), including MIT of pipelines prior to their burial to ensure mechanical integrity. During the time between the initial MIT of wells and the retesting in five years, the requirement for regular ground-water sampling of monitoring wells as well as the commitment by the Applicant in its license application to measure water levels in monitoring wells would both ensure that a breach of integrity in a well structure or pipeline would be detected.

Further, as described in SEIS Section 2.1.1.2, daily measurements of the injection pressures and the lixiviant flow rates of the injection wells would detect leaks in a well or pipeline between MIT. License Condition No. 10.14 would also require weekly inspections of wellfield pipelines, wellheads, and module buildings in accordance with those approved by the NRC; additionally

License Condition No. 11.1(B) would require that the results of the daily pressure and flow-rate monitoring activities be submitted quarterly or made available for inspection upon request. NRC staff would verify that the MIT procedures are appropriate and that the testing has been performed as described in the Applicant's SOPs during a pre-operational inspection. In addition, NRC staff would review MIT testing records and other compliance issues during routine annual or semi-annual inspections. As part of an NRC staff review of environmental impacts to ground water at previously licensed ISR projects, it was determined that a small percentage of the wells tested failed and, with one exception, the data from the respective project's ground-water monitoring did not identify any impact attributable to well failure (NRC, 2009d). See also Comment Nos. RP024-443, RP032-036, RP032-037, RP032-041, and RP032-042 for information related to ground-water and water-level monitoring. The NRC has revised the FSEIS by discussing Condition No. 10.14 of the Draft License in FSEIS Section 2.1.1.1 and discussing the NRC staff's review of environmental impacts to the ground water at previously licensed ISR projects in FSEIS Section 4.5.1.3.

Comment: RP032-017

The commenter referenced the statement in DSEIS Section 2.1.1.1, "The Applicant would test for leaks with fresh water on the pipelines prior to their burial, in order to ensure the pipelines' mechanical integrity." The commenter requested additional information on: 1) the specific standards, approved test protocols, and hardware inspections that the NRC generally requires and specifically intends to apply to the Ross Project and the potential satellite areas in the Lance District in order to ensure the mechanical integrity of buried pipelines; 2) the leak-detection and warning systems that the NRC would require to ensure that the Applicant promptly addresses leaks and spills; and 3) the NRC verification techniques and protocols that would evaluate a licensee's compliance with buried pipeline-integrity requirements.

Response: *According to License Condition No. 10.5 of the Draft Source and Byproduct Materials License for the Ross Project (NRC, 2014b), the MIT of wells and pipelines in Ross Project wellfields would be conducted in accordance with the Applicant's SOPs, which are reflected in the commitments in Strata's license application. SEIS Section 2.1.1.1 includes the text box, "What is mechanical-integrity testing (MIT)?" which provides the quantitative requirements for MIT, as described in the GEIS. In addition, SEIS Section 2.1.1.1 references the Applicant's license application, which provides details of the MIT that would be conducted. The Applicant's commitment to conducting MIT conforms to the procedure described the GEIS and required by the WDEQ (NRC, 2009b). The well-integrity information obtained by MIT would be documented and filed onsite, and the information would be provided to the WDEQ on a quarterly basis. The NRC would also review this documentation during facility inspections.*

SEIS Section 4.5.1.2 describes the leak- and spill-detection features that would reduce the likelihood and magnitude of pipeline leaks. License Condition No. 10.4 would require that the licensee develop and implement written SOPs prior to operation for all routine operational activities involving radioactive materials, and would require daily measurement of injection pressures and flow rates as well as weekly inspections of wellfield piping, wellheads, and module buildings to detect leaks and spills. Leak-detection devices would be installed in manholes along the pipelines. Further, the Applicant would monitor recovery and injection pipelines and immediately shut down the respective pumps if a leak or spill were to be detected (Strata, 2011b). The CPP would include a control room where a master-control system would allow remote monitoring and control of each wellfield engaged in uranium recovery. Operators would be located in the control room 24 hours a day and would use a computer-based station to

command the master-control system. In addition, related information on the schedule for MIT and water-level monitoring to ensure well and pipeline integrity between MIT is discussed in the NRC staff's related response to Comment No. RP032-016. The same requirements for MIT would be required in any license amendments for the potential satellite areas in the Lance District. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-030

The commenter referenced the statement in DSEIS Section 2.1.1.2, "The monitoring of water levels that would be performed would serve to avert a potential excursion." The commenter then asked: 1) Which specific "water levels" would be monitored, how would they be monitored, and where would they be monitored? 2) How does the NRC infer from water levels, scientifically, that an excursion is about to occur as opposed to its detecting an excursion which is already in progress? 3) What has been the record at uranium-recovery facilities of licensees using such water-level measurements to avert excursions from occurring? 4) How many excursions that were later confirmed to have occurred were correctly forecast by such water-level measurements, and why did such water-level measurements fail to avert them?

Response: *1) The statement referenced by the commenter refers specifically to water levels in the perimeter monitoring wells. The Applicant has committed to measuring water levels in all monitoring wells semi-monthly, as discussed in the NRC staff's responses to Comment Nos. RP024-443, RP032-019, and RP032-031 (i.e., the frequency of water-level measurements). The method of water-level measurement is not specified because the method for water-level measurements is simply and straightforwardly the distance from the ground's surface to the top of the water contained within a monitoring well.*

2) Water-level data from the semi-monthly measurements of the monitoring wells' water levels would indicate hydrologic imbalances in a wellfield, if imbalances were to occur. Hydrological imbalances can lead to excursions. Operational adjustments by the Applicant, such as changing flow rates of injection and recovery wells or shutting down individual injection wells, could correct hydrologic imbalances and might serve to recover an excursion before it would be detected by water-quality monitoring.

In addition, water-level measurements in perimeter monitoring wells are essential for the Applicant to document the "net inward gradient" during uranium-recovery operation throughout a given wellfield's operation and restoration (until the Applicant initiates the ground-water-stabilization period); this net inward gradient would be required by the Source and Byproduct Materials License for the Ross Project. (See also Comment Nos. RP032-036, RP032-037, RP032-041, and RP032-042 for information related to ground-water monitoring requirements found in the Draft License.) As described in SEIS Section 2.1.1.2, the Applicant's monitoring of perimeter wells' water levels would ensure that a net inward hydraulic gradient is maintained in a given wellfield. A constant inward gradient would serve to reduce the potential of an excursion. FSEIS Section 2.1.1.2 has been revised to replace the phrase "serve to avert" with "reduce the potential" in the statement that was the subject of this comment.

3 and 4) Specific analyses regarding the success of water-level measurements in forecasting excursions at other uranium-recovery facilities, as requested by the commenter, is not available. Similarly, no data are available regarding the success or failure of water-level information with respect to actual excursions. However, the NRC believes that monitoring-well water levels are an effective tool to reduce the potential for excursions because water levels reflect ground-water

flow directions and excursions occur when the ground-water flow is directed outside of a wellfield.

Comment: RP032-053

The commenter inquired about how the Applicant's compliance with "local, State, and Federal requirements related to air quality as well as occupational health and safety" would be ascertained. The commenter also requested information regarding other ISR facilities and their respective compliance with radon-related requirements such as effluent monitoring, ventilation, and personnel protection.

Response: *If the Ross Project were to be licensed, the NRC staff would inspect the Project as would be specified in the Source and Byproduct Materials License that the Applicant would be issued. These inspections would specifically evaluate compliance with all effluent limits and radiation-dose standards, including those pertaining to air emissions and direct radiation, with which Strata would be required to comply. Wyoming (i.e., the WDEQ/Air Quality Division [AQD]) would also perform inspections and audits related to the Air Quality Permit that the agency has already issued to the Applicant for the Ross Project (see the WDEQ/AQD's "Permit to Construct, Air Quality Permit No. 12198") (WDEQ/AQD, 2011). Because the Ross Project has not yet received a license from the NRC, the NRC has no compliance data available for the Project itself. Compliance at other ISR facilities, operations, or projects are not within the scope of this SEIS, which addresses only the potential environmental impacts of the Ross Project. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP032-071; RP032-077; RP035-035

The commenters recommended that the NRC staff include a map that clearly depicts the locations of the 29 water-supply wells within the Ross Project area and the surrounding 2-km (1-mi) area.

Response: *As discussed in FSEIS Sections 3.5.3, 3.12.1, and 6.2.5, these 29 water-supply wells have been monitored by the Applicant for ground-water quality for site-characterization purposes and to include related pre-licensing water-quality data in its license application. In addition, the Applicant has proposed that it would monitor these 29 wells throughout the lifecycle of the Ross Project. A map depicting the 29 water-supply wells that have been, and would be, monitored for ground-water quality by the Applicant throughout the Project's lifecycle has been added as Figure 3.15 to FSEIS Section 3.5.3 (Strata, 2011a).*

Comment: RP035-041

The commenter stated that including an adaptive-management approach for responding to unanticipated water-quality-monitoring results that are outside the range of expected values in the environmental-monitoring plan would be valuable additional mitigation measure.

Response: *The NRC staff agrees that an adaptive management approach would help to reduce the likelihood of a water-quality incident's occurring and increase the likelihood that water-quality incidents are resolved efficiently. The Draft Source and Byproduct Materials License includes several conditions that would require the Applicant to submit reports on a regular basis, reports that would document corrective actions taken in response to events with environmental consequences (NRC, 2014b). For example, Condition No. 11.6 of the Draft*

Source and Byproduct Materials License would require that the Applicant submit a written report to the Commission detailing conditions leading to a spill or incident/event (including wellfield excursions), corrective actions taken, and results achieved. An inherent benefit to these reporting requirements is that they would permit the Applicant and the NRC staff to employ lessons learned from past incidents/events to address future incidents/events. This is a form of adaptive management that would be required by the NRC Source and Byproduct Materials License. No changes have been made to the SEIS beyond the information provided in this response.

B.5.9.6 Aquifer Protection and Restoration

Comment: RP024-162

The commenter indicated that the description of the purpose of an aquifer exemption in relation to underground source of drinking water (USDW) protection in DSEIS Section 2.1.1.3 did not adequately address the protection of adjacent aquifers and suggested that the discussion be revised.

Response: *The NRC staff has revised the text in FSEIS Section 2.1.1.3 to discuss that ground water in aquifers outside of the aquifer-exemption boundaries (i.e., those boundaries that define the exempted portion of the ore-zone aquifer, where uranium recovery is permitted) are protected as USDWs. As such, the USDWs must meet the water-quality requirements in 10 CFR Part 40, Appendix A, Criterion 5B(5).*

Comments: RP024-163; RP024-165

The commenter identified the five proposed aquifer-restoration activities described in DSEIS Section 2.1.1.3 by the statement, "The aquifer-restoration activities proposed for the Ross Project are the same as those methods described in Section 2.5 of the GEIS: 1) ground-water transfer, 2) ground-water sweep, 3) RO with permeate injection, 4) ground-water recirculation, and 5) stabilization monitoring (Strata, 2011a; NRC, 2009b)." The commenter indicated these five activities are consistent with Strata's license application; however, the commenter suggested including a statement to describe how the Applicant proposes to use these activities with flexibility. The commenter also suggested revising the following statement in DSEIS Section 2.1.1.3: "The Applicant's proposed restoration methodology would include ground-water sweep, permeate injection, and ground-water recirculation." The commenter asked that the two statements be made consistent within Section 2.1.1.3 of the FSEIS.

Response: *The NRC staff agrees that these statements should be made consistent. The staff has revised the text in FSEIS Section 2.1.1.3 by adding the following statement: "The Applicant's proposed aquifer-restoration methodology would use all of the five activities described in the GEIS, which would be applied in a flexible manner so as to optimize the overall aquifer-restoration process."*

Comment: RP024-166

The commenter referenced a statement in DSEIS Section 2.1.1.3, "The water removed from the aquifer during the sweep first would be passed through an IX system to recover uranium and then be disposed of as excess permeate." The commenter then opined that the statement is

inconsistent with Strata's license application, because the application does not describe the two-phase RO system.

Response: *The NRC agrees with the commenter and has revised the text in FSEIS Section 2.1.1.3 in order to provide a clear explanation that water from the ground-water sweep would be first passed through the IX system to recover uranium and vanadium, then it would be treated by the two-phase RO system. After that, the water would be reused or disposed of as excess permeate. This statement is now consistent with the license application.*

Comment: RP024-168

The commenter suggested that Section 2.1.1.3 in the FSEIS include a discussion of ground-water transfer, as described in the Applicant's TR Section 6.1.2, which has been proposed by the Applicant as an aquifer-restoration activity.

Response: *The NRC agrees with the commenter, and it has revised the text in FSEIS Section 2.1.1.3 by adding a definition and an additional statement which describe ground-water transfer: "Ground-water transfer is the movement of ground water between a wellfield entering restoration and another wellfield where uranium recovery is beginning, or between areas within the same wellfield that are in different stages of aquifer restoration. The objective of ground-water transfer is to blend ground-water compositions, and it generally does not generate liquid effluents (NRC, 2009a)." This revision makes Strata's license application and FSEIS Section 2.1.1.3 consistent.*

Comment: RP024-171

The commenter suggested that the NRC add a discussion of the pore-volume estimate prepared by the Applicant for the Ross Project to FSEIS Section 2.1.1.3. The commenter also suggested that the NRC address how this estimate relates to the Applicant's RAP, which was included as Addendum 6.1-A in its TR (Strata, 2011b).

Response: *The NRC staff has revised the text in FSEIS Section 2.1.1.3, which now clearly explains that the Applicant estimated and committed to 9.5 pore volumes of ground-water sweep, injection of permeate, and ground-water recirculation during aquifer restoration. The costs of restoration using 9.5 pore volumes were included in the Applicant's decommissioning-funding estimate, which in turn was used as the Applicant's basis for its financial-assurance surety. The estimate and the accompanying financial surety instrument are described in the Applicant's RAP. The NRC staff found that the Applicant's estimate of 9.5 pore volumes was acceptable because the estimate is within the range currently used by the uranium-recovery industry, and the Applicant commits to minimizing inefficiences and adjusting the decommissioning estimate based upon its future experience (NRC, 2014a).*

Comments: RP024-172; RP024-173; RP024-175

The commenter questioned the purpose of aquifer stabilization as described in DSEIS Section 2.1.1.3 by the statement: "The purpose of stabilization during aquifer restoration is to establish a chemical environment that would reduce the solubility of dissolved constituents such as uranium, arsenic, and selenium, as described in GEIS Section 2.5.4." The commenter also noted that the discussion in the DSEIS section includes the Applicant's use of a chemical reductant to immobilize uranium and dissolved species, even though the Applicant did not

specifically commit to the use of reductants. The commenter also noted that the Source and Byproduct Materials License would require the Applicant to specifically submit a plan for the NRC's review before biological or chemical reductants could be used. Therefore, the commenter suggested omitting or revising the discussion of aquifer stabilization.

In addition, the commenter referred to two related statements in DSEIS Section 2.1.1.3: "The need for aquifer stabilization would be determined on a case-by-case basis..." and "The Applicant would reinitiate the entire aquifer-restoration phase if stabilization monitoring determines it is necessary." The commenter then remarked that these statements were inconsistent with Strata's license application. The commenter observed that the concept of aquifer stabilization as used in the license application applied to monitoring and not the use of biological or chemical reductants. The commenter pointed out that, rather than iterate the entire aquifer-restoration process, additional evaluation would be performed by the Applicant in order to identify any hot spots and to observe any significant increasing trends. This additional evaluation could include additional monitoring, fate-and-transport modeling, or additional aquifer-restoration actions.

Response: *The NRC staff has revised the text in FSEIS Section 2.1.1.3 to clearly distinguish between the general description of the aquifer-stabilization process included in the GEIS and the Applicant's proposed aquifer-restoration techniques as set forth in Strata's license application as well as those techniques that will be required by the Source and Byproduct Materials License issued to Strata. In addition, supplemental information has been added to FSEIS Section 2.1.1.3 regarding the Applicant's commitments to aquifer stabilization and stabilization monitoring. This information supports the NRC's determination in its SER that the license application provides reasonable assurance the Applicant would restore ground water to the respective ground-water protection standards of 10 CFR Part 40, Appendix A, Criterion 5B(5) and that the extent of restoration activities undertaken ensures compliance with ground-water protection standards that are protective of human health and the environment as required by 10 CFR Part 40, Appendix A, Criterion 5D (NRC, 2014a).*

The statements on aquifer restoration referenced by the commenter have been modified to accurately reflect the commitment by the Applicant and the Draft Source and Byproduct Materials License. The revised text in FSEIS Section 2.1.1.3 reflects these modifications, which now states that "Further analysis and evaluation would be conducted in the event that water-quality parameters exhibit a statistically significant increasing trend or areas of ground water not meeting the water quality protection standards are identified within the aquifer (Strata, 2011b). This analysis may include additional monitoring and flow transport modeling. If the evaluation reveals that ground water outside the exempted aquifer could potentially be affected, the Applicant may repeat a previous phase of active restoration."

Comments: RP024-152; RP032-037; RP032-042

One commenter noted that the DSEIS states that, as aquifer restoration occurs in depleted wellfield modules, uranium-recovery operation would be ongoing in subsequent wellfield modules and asked a series of questions related to this topic.

1) Could the difference between a "well[field] module" and a "wellfield" for the purposes of establishing accountable units for implementing and assessing aquifer restoration be clarified?

2) How many lixiviant injection and uranium-recovery wells would comprise a typical Ross Project well[field] module? How many such modules would comprise a wellfield? How many wellfields would ultimately be deployed pursuant to the NRC's granting of a license to the Ross Project?

3) Would the post-licensing, pre-operational constituent concentrations found in perimeter ground-water monitoring wells and baseline recovery wells be applied for the purpose of determining the target restoration values (TRVs) to individual well modules, or to a group of several well modules, or to a wellfield?

4) What is the approved standard for each constituent that would be subjected to monitoring to demonstrate that the approved standard has been met for aquifer restoration and that would be used to demonstrate that any adjacent nonexempt aquifers are unaffected? Who would conduct this quarterly sampling and, if it is the Applicant, how would the NRC obtain independent verification of the results? What happens if quarterly sampling demonstrates that one or more adjacent non-exempted aquifers are affected?

5) How many discrete environmental accountancy areas (i.e., groups of location-specific UCLs and TRVs) would be established within the Ross Project to detect and control excursions and set standards for aquifer restoration?

6) Who is responsible for establishing and maintaining this large and complex dataset of water-quality measurements, and where would it be maintained?

7) How would the relevant UCLs and TRVs applicable to each specific well[field] module be communicated to the field personnel responsible for detecting and preventing excursions and assessing aquifer-restoration progress and success at particular sites?

8) With a small workforce attending to so many individual environmental-compliance units that must monitored and assessed, how would the Applicant and the NRC avoid confusion or misapplication of standards between units?

9) Would the NRC provide a description of its process for reviewing and validating the environmentally protective character of UCLs and TRVs proposed for inclusion in the Ross Project license over time, and would the NRC describe how it would verify the authenticity of the large number of site-specific datasets required? If there are differences in view between the NRC and the Applicant on the establishment or revision of UCLs and TRVs, how would these differences be adjudicated and resolved? Who within NRC holds the final decision authority on such matters? The other commenter discussed UCLs are subject to the NRC's review and approval, noting Condition No. 10.13 in the Draft Source and Byproduct Materials License.

10) Would the NRC provide a map showing the location and planned restoration sequence of the Ross Project "well[field] modules" that would undergo restoration, relative to those modules in which "ISR operation would be ongoing" at the same time? Would the NRC provide detailed topographic and stratigraphic maps showing the location, relative to the Ross Project, of all subsequent well[field] modules in contiguous areas currently scheduled for Lance District development in which uranium recovery would be ongoing while Ross Project well[field] modules are undergoing restoration? Would all "well[field] modules" undergoing restoration be hydrologically upgradient of well[field] modules in which uranium recovery would be ongoing?

11) Would the NRC define a "baseline recovery well," as the term is used in the Applicant's ER, and describe how it would be used to establish UCLs and TRVs?

Response: *With respect to 1) and 2), the Ross Project production area (all wellfields and the processing facility, including the CPP) consists of 50.6 – 58.7 ha [125 – 145 ac] within the licensed area. The proposed wellfields are divided into two "mine units," under the WDEQ Permit to Mine, which are further delineated into wellfield modules. (See NRC's response to Comment No. RP032-040 as well for a discussion of wellfield modules and accounting units.) The total number of wellfield modules for the proposed Ross Project is estimated to be between 15 – 25. The primary components of a wellfield module, including the injection well, the recovery well, the shallow[-aquifer] monitoring well, the deep[-aquifer] monitoring well, and the perimeter monitoring well, are illustrated in SEIS Figure 2.7. The Applicant proposes that each wellfield module would consist of 40 recovery wells. The total number of injection wells would be a multiple of the total number of recovery wells and would depend on the "spot pattern" used. Each wellfield module would undergo aquifer restoration. As Condition No. 10.6 of the Draft License indicates, sampling conducted by the Applicant during restoration-stability monitoring shall include the specified production-zone- (i.e., ore-zone-) aquifer wells used to define the wellfield's baseline levels (NRC, 2014b). As Draft License Condition No. 11.3 also indicates, post-licensing, pre-operational ground-water quality would be established by the Applicant's collection of samples from the injection wells, the recovery wells, the shallow monitoring wells, the deep monitoring wells, and the perimeter monitoring wells prior to uranium-recovery operation.*

Currently, Condition No. 11.4 of the Draft License addresses the establishment of UCLs (NRC, 2014b):

> 11.4 Establishment of UCLs. Prior to injection of lixiviant into a wellfield, the licensee shall establish excursion control parameters and their respective upper control limits (UCLs) in the designated overlying aquifer, underlying aquifer and perimeter monitoring wells in accordance with Section 5.7.8.2 of the approved license application. The default excursion parameters for wells in the ore zone and overlying aquifer are chloride, conductivity, and total alkalinity. The default excursion parameters for wells in the underlying aquifer are sulfate, conductivity, and total alkalinity. The UCLs shall be established for each excursion control parameter and for each well, wellfield or subset of the wellfield, as appropriate, based on the mean plus five standard deviations of data collected for LC11.3. The UCL for chloride can be set at the background [in this SEIS, "post-licensing, pre-operational"] mean concentration plus either five standard deviations or 15 mg/l, whichever is higher.

3) As stated in the SER (NRC, 2014a), the NRC staff acknowledges that the Applicant refers to the "baseline" values as TRVs or target restoration goals (TRGs), although such references are not derived from NRC-implementing regulations. As discussed in SEIS Section 6.3.2, the post-licensing, pre-operational data would be collected from each individual wellfield as its installation is completed, but prior to the Applicant's initiating uranium recovery. Each wellfield's monitoring data would be used to establish NRC-approved UCLs. Thus, the excursion indicators and the aquifer-restoration target values would be wellfield specific. SER Section 5.7.8.3.1.2 states, "During the construction phase, the Applicant proposes to conduct a background [in this SEIS, "post-licensing, pre-operational"] monitoring program for each wellfield to define its 'primary' restoration goals [restoration standards] and determine its upper control limits (UCLs) for the excursion monitoring program."

4) As described in the response to 3) above, the post-licensing, pre-operational data for each wellfield that would be used to establish the restoration standards and UCLs would be collected as wellfield installation is completed. Therefore this information is not currently available. Regular sampling would be conducted by the Applicant in accordance with the license, if granted. If an excursion is detected, the following would occur according to Draft License Condition No. 11.5 (NRC, 2014b):

> If, at any well during a semi-monthly sampling event, the concentrations of any two excursion indicator parameters exceed their respective UCL or any one excursion indicator parameter exceeds its UCL by 20 percent, then the excursion criterion is exceeded and a verification sample shall be taken from that well within 48 hours after results of the first analysis are received. If the verification sample confirms that the excursion criterion is exceeded, then the well is placed on excursion status. If the verification sample does not confirm that the excursion criterion is exceeded, a third sample shall be taken within 48 hours after results of the first verification sampling are received. If the third sample shows that the excursion criterion is exceeded, the well shall be placed on excursion status. If the third sample does not show that the excursion criterion is exceeded, the first sample shall be considered to be an error and routine excursion monitoring is resumed (the well is not placed on excursion status).
>
> Upon confirmation of an excursion, the licensee shall notify NRC as stated below, implement corrective action, and increase the sampling frequency for the excursion indicator parameters at the well on excursion status to at least once every seven days. Corrective actions for confirmed excursions may be, but are not limited to, those described in Section 5.7.8.2 of the approved license application. An excursion is considered corrected when concentrations of all indicator parameters defining the excursion status are at or below the UCLs defined in LC [Draft License Condition] 11.4 for three consecutive weekly samples.
>
> For wellfields located in an area in which the uppermost aquifer, the "SA Aquifer", is comprised of saturated unconsolidated alluvium, the licensee will include monitoring wells in the SA Aquifer in that area of the wellfield as part of the excursion monitoring program as described above. The hydrologic-test data package must include sufficient justification on the locations, baseline [in this SEIS, "post-licensing, pre-operational"] sampling if the frequency is less than quarterly and operational sampling if the frequency is less than semi-monthly for wells in the uppermost aquifer. The justification must demonstrate that the wells provide early detection of a release (including a surficial release).
>
> If a vertical excursion is detected during operations, then injection of lixiviant into the production area surrounding the monitoring well will cease until the licensee demonstrates to the satisfaction of NRC that the vertical excursion is not attributed to leakage through any abandoned drillhole.
>
> If an excursion is not corrected within 60 days of the initial confirmation, the licensee shall either: (a) terminate injection of lixiviant within the wellfield, or a portion of the wellfield provided the licensee demonstrates to NRC that only a portion of the wellfield is within the area of influence for the excursion) until the excursion is corrected; or (b) increase the financial surety in an amount to cover the full third-party cost for correcting and cleaning up impacts that may be attributed to the excursion. The surety increase shall remain in force until the NRC has verified that the excursion has been corrected and appropriate remedial actions have been undertaken. The written 60-day excursion report shall identify which course of action the licensee is taking if the excursion has not been corrected. Under no circumstances does this condition eliminate the requirement that the licensee

> remediate the excursion to meet ground-water protection standards as required by LC [License Condition No.] 11.3.
>
> The licensee shall notify the NRC Project Manager (PM) by telephone or email within 24 hours of confirming a lixiviant excursion, and by letter within 7 days from the time the excursion is confirmed, pursuant to this LC [License Condition] 9.3. A written report describing the excursion event, corrective actions taken, and the corrective action results shall be submitted to the NRC within 60 days of the excursion confirmation. For all wells that remain on excursion status after 60 days, the licensee shall submit a report as discussed in LC [License Condition No.] 11.1(A).

5) For those wells used to define restoration standards, the Applicant proposes a density of one well to a maximum of every 1.6 ha [4 ac] of production (i.e., uranium-recovery) area (Strata, 2011a). Based upon the currently defined production wellfield area, the Applicant estimates 24 such wells, encompassing both mine units within the Ross Project. The Applicant commits to one such well per wellfield module (see SER Figure 5.7-1) (NRC, 2014a).

Wells to be used for excursion-detection monitoring consist of those wells in the overlying and underlying aquifers in addition to wells in the ore-zone aquifer's perimeter-monitoring ring surrounding the production area (Strata, 2011a). Wells in the underlying and overlying aquifers would be completed as well clusters at the locations of the post-licensing, pre-operational monitoring wells for the ore-zone aquifer (i.e., 24 locations within both mine units). Wells in the perimeter-monitoring ring would be completed approximately 120 m [400 ft] from the closest production-unit wells, at a spacing of approximately 120 m [400 ft] within the monitoring-well ring that surrounds the mine unit (Strata, 2011b).

6) As currently stated in Draft License Condition Nos. 11.4 and 11.5, above, the Applicant would be responsible for collecting and maintaining the water-quality-measurement dataset. Condition No. 11.1 in the Draft License addresses the monitoring, recording, and bookkeeping requirements (NRC, 2014b):

> 11.1 In addition to reports required to be submitted to NRC staff or maintained on-site by the applicable parts of Title 10 of the Code of Federal Regulations, the licensee shall prepare the following reports related to operations at the facility:
>
> A) A quarterly report that includes a summary of the excursion indicator parameter concentrations, corrective actions taken, and the results obtained for all wells that were on excursion status during that quarter. This report shall be submitted to NRC within 60 days following completion of the reporting period.
>
> B) A quarterly report summarizing daily flow rates and pressures for each injection manifold within the operating system. This report shall be made available for inspection upon request.
>
> C) A semi-annual report that discusses: status of wellfields (or wellfield modules if appropriate) in operation (including last date of lixiviant injection), progress of wellfields (wellfield modules) in restoration, status of any long term excursions and a summary of MITs during the reporting period. This report shall be submitted to NRC within 60 days following completion of the reporting period.
>
> D) Consistent with Regulatory Position 2 of Regulatory Guide 4.14 (as revised), a semiannual report that summarizes the results of the operational effluent and

> environmental monitoring program. For this program, the nearby water supply wells are those within 2 km of the perimeter ring monitoring wells for all wellfields undergoing recovery operations or restoration. This report shall be submitted to NRC within 60 days following completion of the reporting period.
>
> E) An annual report pursuant to LC [License Condition No.] 9.4(E).
>
> F) An annual report that summarizes modifications to the inventory of nearby water supply wells and land-use survey within 2 kilometers of any production area. This report shall be submitted to NRC within 90 days following completion of the reporting period.

7) As indicated by the Draft Source and Byproduct Materials License (NRC, 2014b), the Applicant would be required to measure the excursion parameters at all wells on a semi-monthly basis. If the UCLs are exceeded (and the well is on excursion status), the Applicant would be required to notify NRC within a short time frame (48 hours), perform weekly sampling and corrective actions until the parameters are below the UCLs. By license condition, if the well is on excursion status for 60 days, the Applicant would be required to stop operations in that area and/or post additional surety to clean up the area.

The TRVs (i.e., ground-water protection standards) will be evaluated by NRC staff upon completion of restoration and stabilization of a wellfield. The Applicant could not complete decommissioning of the wellfield until the NRC staff approves that the restoration is protective of human health and the environment.

8) The Radiation Safety Officer would have to meet the qualifications specified in the Source and Byproduct Materials License and would be responsible for ensuring the Applicant's compliance with NRC regulations. Also, the NRC staff would perform routine inspections, generally semi-annually, to ensure all programs are in compliance with the applicable regulations.

9) As stated in the GEIS (NRC, 2009b), Section 2.2, "Preconstruction," the NRC verifies the accuracy of the water-quality data by ensuring that the Applicant's or licensee's procedures include 1) acceptable sample-collection methods, 2) a set of analytical parameters that is appropriate for the respective project and the uranium-extraction method, and 3) collection of sample sets that are sufficient to represent the natural spatial and temporal variations in water quality.

Condition No. 10.13 of the Draft Source and Byproduct Materials License currently addresses the wellfield package (NRC, 2014b):

> 10.13 Wellfield Package. Prior to conducting principal activities in a new wellfield, the licensee shall submit a hydrologic test data package (wellfield package) to the NRC. The initial wellfield package will be submitted for NRC staff review and verification. Each wellfield package shall be submitted at least 60 days prior to the planned start date of lixiviant injection. In each wellfield data package, the licensee will document that: (1) all perimeter monitoring wells are screened in the appropriate horizon in order to provide timely detection of an excursion; and (2), the baseline [in this SEIS, "post-licensing, pre-operational"] values to establish ground-water protection standards and UCLs for the Wellfield in accordance with LC 11.3. The wellfield package will adequately define heterogeneities that may affect the chemical signature and ground-water flow paths

within the ore zone as described in Sections 2.7.3.2.3, 3.1.1 and 5.7.8.1 of the approved license application.

If there are differences in view between the NRC and the Applicant on the establishment of UCLs and TRVs, the NRC may elect to issue a generic letter to all licensees with that respective type of license to clarify what is expected by NRC staff. In the end, the NRC staff will have to approve, by a finding of reasonable assurance, that the final state of the restoration is protective of human health and the environment. It is unlikely that TRVs will be revised (an ACL is not a revised TRV – however, an ACL will have to be approved by staff). In order to modify a UCL, the licensee would submit a request to the Commission to review and approve.

The Decommissioning and Uranium Recovery Licensing Directorate within the Division of Waste Management and Environmental Protection is responsible for overseeing licensed uranium-recovery operations. Additional information about the NRC's oversight of licensed uranium-recovery operations is provided on the NRC's public web site at http://www.nrc.gov/materials/uranium-recovery/inspections.html.

10) The response to Comment No. RP032-022 provided within this Appendix B discusses the locations of wellfields within the proposed Ross Project and potential Lance District satellite areas.

In Section 3.2. of its license application, the Applicant stated that aquifer restoration would begin approximately 6 – 12 months after operation has been completed in the wellfield modules, which would occur concurrently with operation of other wellfield modules. Figure 1.3-1 of the Applicant's ER and Figure 2.6 of this SEIS both provide the projected Ross Project schedule, including the timing of the aquifer-restoration phases for each proposed mine unit. However, it should be noted that, although the ER figure indicates that operation of Mine Unit 1 and Mine Unit 2 would begin concurrently, Condition No. 10.19 of the Draft License states that the Applicant shall confine its operations to wellfields within Mine Unit 1 until use of the three industrial wells, "19XX18," "22x-19," and "789V" have ceased operation or have diminished to an acceptable level that has been reviewed and verified by NRC staff. Therefore, the timing of the development and restoration of each wellfield module cannot be provided with accuracy at this time, and it is also cannot be stated at this time whether all wellfield modules undergoing restoration would be hydrologically upgradient of wellfield modules in which uranium recovery would be ongoing. However, as stated in the response above to Question 9, prior to operation, the NRC would verify the accuracy of the water-quality data of each wellfield module.

11) The term "baseline recovery well" is not used in the SEIS. The process to establish "baseline" (i.e., post-licensing, pre-operational) water quality is discussed in FSEIS Section 2.1.1.1, Condition No. 11.3 of the Draft Source and Byproduct Materials License, and in this Appendix B in response to Comment No. RP032-036.

Comment: RP024-218

The commenter noted that the statement in DSEIS Section 2.2.3, which indicated that the permeate stored in the surface impoundments would be reused as "lixiviant or process water," ignores the primary use of permeate, which is injection into wellfield modules undergoing RO treatment with permeate injection.

Response: *The NRC staff has revised the text in FSEIS Section 2.2.3 to clarify that re-used permeate could be injected into wellfield modules as they undergo RO treatment.*

Comment: RP032-038

The commenter noted the statement in DSEIS Section 2.1.1.3, "The pumping rates used would depend on the hydrologic conditions at the Ross Project, and the duration of the aquifer sweep and the volume of water removed would depend on the volume of the aquifer affected by the ISR process." The commenter then asked: 1) for an explanation of the specific existing, planned, or expected hydrologic conditions at the Ross Project that will affect the pumping rates, duration, and volume of water removed during aquifer sweep; 2) why these particular hydrologic conditions have not already been ascertained or modeled based on the results of pre-licensing site investigations; and 3) how the hydrologic uncertainties affect the forecast efficacy of the NRC's efforts to ensure environmentally protective aquifer restoration. In addition, the commenter asked for: 4) a detailed and adequate NEPA discussion that relates the prevailing uncertainties in hydrologic knowledge of the Ross Project and potential development in the Lance District to the Applicant's ability to achieve, and the NRC's ability to enforce the ground-water protection standards; 5) the range of potential environmental outcomes, in terms of the restoration of the relevant baseline water quality concentrations, arising from uncertainties in hydrologic knowledge of the Ross Project and the Lance District; and 6) for the likelihood of achieving representative sets of post-mining water quality concentrations for the relevant constituents that must be monitored and controlled to ensure public health and safety and minimize harmful environmental impacts and the irretrievable commitment of natural resources (based upon the record of previous and ongoing ISR operations in the NSDWUMR and within Wyoming).

Response: *The sentence referenced from DSEIS Section 2.1.1.3 refers to the rate, duration, and volumes of water removed by the ground-water sweep during restoration. The purpose of ground-water sweep is twofold: 1) to reduce the total concentrations of salts in ground water to levels that are amenable to the ground-water treatment equipment, and 2) to capture any lixiviant that moved away from the edge of the production area.*

1 and 2) The hydrologic conditions that may affect the pumping rate are the porosity and permeability. The duration of the sweep and volume of water removed by the ground-water sweep depend upon the extent of ground water affected by lixiviant. The level of detail on the hydrological conditions that would affect the pumping rate would not be known until the wellfield hydrologic test data package is developed and operational data are collected on the hydrologic conditions, if the License is granted. The level of hydrologic detail that ultimately would influence the pumping rate during aquifer restoration is not necessary for impact analysis in the SEIS because of the overall requirement that restoration achieve ground water protection standards. There is no reason to ascertain or model, based on the results of pre-licensing, site-characterizations investigations, greater hydrologic detail than presented in the license application (Strata, 2011a; Strata, 2012b).

3) Variation or uncertainties in the hydrologic conditions would not affect NRC's requirements for aquifer restoration that meets ground-water protection standards. Additional information on the hydrologic conditions would be included in the wellfield hydrologic-test data package currently discussed in Draft License Condition 10.13 and described in response to Comments RP032-037; RP032-042. Although the NRC staff has set limits for the Applicant on timing to complete

the aquifer restoration, the NRC does not impose timing for various phases of restoration efforts, within the overall aquifer-restoration phase for each wellfield.

4, 5, and 6) There is no relationship between the current uncertainties in hydrologic knowledge of the Ross Project and the range of potential environmental outcomes, or the Applicant's ability to achieve and the NRC's ability to enforce the water-protection standards. This lack of relationship is a result of the Commission's requirement that the Applicant would achieve water-protection standards in all cases, as described in the response to Comment Nos. RP032-004, RP032-020, RP032-36, 032-041, and 041-006. Please also see the NRC's response to Comment No. RP032-026 for a discussion of the requirements to consider uncertainties in operating parameters.

Please see the NRC's responses to Comment Nos. RP032-002, RP032-067, and RP041-009, which describe the environmental-review process that the NRC staff would follow if Strata were to submit a license-amendment application to the Commission to expand its operation into any of the Lance District satellite areas.

Additional information related to aspects of ground-water restoration that are the subject of this comment has been added to the FSEIS. Section 2.1.1.3 of the FSEIS has been revised to clarify the purpose of ground-water sweep in the overall sequence of activities for ground-water restoration. The results (i.e. the constituent concentrations) achieved by ground-water restoration of uranium-recovery wellfields located in NSDWUMR and within Wyoming that have been recently approved by NRC have been added to FSEIS Section 4.5.1.3. In addition, Appendix B1, which describes Commission's process for approving and implementing ACLs has been added.

Comment: RP032-039

The commenter referenced the following statements in DSEIS Section 2.1.1.3: "The Applicant's aquifer restoration plan calls for removing up to 0.5 pore volumes of water during ground-water sweep (Strata, 2011b). Additional pumping would occur in select areas that would be identified during facility operation. The pumping rate is estimated at 280 L/min [75 gal/min] from well[field] modules in the ground-water sweep stage." The commenter stated that these statements disclose very little information about the likely range of environmental impacts from aquifer restoration activities. The commenter then asked a series of questions about ground-water quantity impacts that could be associated with aquifer restoration under the Proposed Action:

1) If an Applicant's aquifer-restoration plan would call for the removal of "up to" 0.5 pore volumes during ground-water sweep, does this mean that this number represents a hard-and-fast regulatory limit on the amount of water that would actually be removed during ground-water sweep?

2) Would the NRC provide a table showing the actual pore volumes removed from prior and ongoing uranium-recovery facilities in a) this GEIS uranium-milling region and b) within Wyoming that have undergone "aquifer restoration"?

3) Would the NRC provide a table showing expected and maximum allowable pore volumes per well[field] module (or other applicable unit for aquifer restoration) that would be removed in the course of aquifer-restoration activities during the Ross Project?

4) Would the NRC provide a discussion: a) comparing the environmental risks and benefits from high levels of pore-volume removal from the ore-bearing aquifer with the environmental risks and benefits of failing to attain Final License-specified TRVs (or other standards) for aquifer restoration; b) describing the methodology the NRC and/or the Applicant would employ to evaluate environmental-restoration decisions regarding this tradeoff and the point at which concerns regarding the consumptive use of ground water may trump the achievement of particular TRVs? (That is, does the NRC consider consumptive use when determining when to conclude aquifer restoration?)

5) Would the NRC provide pore-volume and gallons-withdrawn estimates for the potential Lance District development?

Response: *The text quoted by the commenter was taken from DSEIS Section 2.1.1.3. The analysis of environmental impacts to ground water is presented in SEIS Section 4.5, and in particular, SEIS Section 4.5.1.3 provides an analysis of the potential impacts to water resources during the aquifer-restoration phase of the Proposed Action. When discussing consumptive-use impacts during aquifer restoration, the DSEIS stated the following:*

> The magnitude of potential impacts to water quantity of the OZ aquifer and the surrounding aquifers during the aquifer-restoration phase of the Proposed Action would be greater than from its operation because of the greater consumptive use of ground water (Strata, 2011a). Ground water modeling estimates of the drawdown in the shallow-monitoring (SM) aquifer during both Ross Project operation and aquifer restoration were less than 5 m [15 ft]. The exempted OZ aquifer was predicted to experience significant drawdowns in three wells on the Ross Project area, with minor drawdowns in wells within 3 km [2 mi] of the Project. The conservative regional impact analysis conducted by the ground-water modeling predicts a reduction in the available head in wells used for stock, domestic, and industrial use. Although these effects would be localized and short-lived, the Applicant would commit to provide an alternative source of water of equal or better quantity and quality, subject to Wyoming water-statute requirements, in the event that aquifer-restoration operations prevent the full use of a well under a valid water right (Strata, 2011a; Strata, 2012a). Consequently, the potential impacts of the Proposed Action's aquifer-restoration phase to ground-water quantity of the confined aquifers would be SMALL to MODERATE.

As noted by the commenter, the DSEIS discussed the Applicant's expected removal of 50 percent of the wellfield-module pore volume (PV) (i.e., 0.5 PV) during ground-water sweep. As discussed in Section 6.1.4.2 of the Applicant's license application (Strata, 2011b), for each wellfield module, the reverse-osmosis (RO) treatment with the permeate-injection phase is expected to remove 8 PVs, and the recirculation phase is expected to use 1 PV. Therefore, the Applicant has indicated that it would remove a total of 9.5 PVs during the overall aquifer-restoration phase.

The Applicant's estimate of the number of pore volumes to be removed during aquifer restoration is not a regulatory limit. Similarly, the Source and Byproduct Materials License will not include a maximum allowable pore-volume removal value. Therefore, a table with these values cannot be provided. However, as noted in the SEIS, the GEIS provides a discussion of the operational history at NRC-licensed ISR facilities (NRC, 2009b). Specifically, GEIS Section 2.11.5 provides historical information regarding the quantity of ground water used at ISR facilities during the aquifer-restoration phase. As set forth in the response to Comment No. 024-171, NRC staff found the Applicant's estimate of 9.5 pore volumes to be acceptable because

the estimate was within the range currently used by the industry, and the Applicant has committed to minimizing inefficiences and adjusting the the estimate based upon future experience (NRC, 2014a).

SEIS Section 5.7.2 provides an analysis of the potential cumulative impacts to ground-water resources during the aquifer-restoration phase of the Proposed Action. The NRC staff concludes that consumptive-use cumulative impacts to the area aquifers, including impacts due to the potential Lance District satellite areas, will not adversely impact nearby use of the ground-water resource because of the minimal mutual interference (i.e., minimal overlap of the cones of depression associated with drawdowns) from the Ross Project and the potential satellite facilities due to the distances between satellites, taking into account other reasonably foreseeable uses of the ground water resources, and the expected recovery of the water levels in the aquifer at each satellite following completion of the restoration activities. Therefore, the combined total volume of ground water that would be removed by these projects is not relevant to the Ross Project cumulative impacts analysis and is not presented in the SEIS.

Comment: RP035-008

The commenter noted that the DSEIS states, "Following aquifer restoration, the Applicant would monitor the ground water by quarterly sampling to demonstrate that the approved standard for each constituent has been met and that any adjacent nonexempt aquifers are unaffected." The commenter suggested that the FSEIS include specific direction for the Applicant's determination of whether adjacent, nonexempt aquifers are protected and the mitigation measures that would be employed to address any impacts to these aquifers.

Response: *The specific text quoted by the commenter is taken from DSEIS Section 2.1.1.3. This section of the FSEIS has been revised to include additional information regarding the Applicant's aquifer-stabilization methods and related mitigation measures. Please see responses to Comment Nos. RP032-037 and RP032-042 for further information regarding the NRC's requirements for the Applicant's monitoring of potential excursions outside of the exempted portion of the ore-zone aquifer as well as response to Comment No. RP032-065 regarding the proposed mitigation measures related to potential excursions.*

B.5.9.7 Gaseous or Airborne Particulate Emissions

Comment: RP024-191

The commenter suggested that the NRC staff include a discussion in FSEIS Section 2.1.1.5 of the benefits that accrue by the Applicant's employing pressurized, downflow IX columns.

Response: *The NRC staff has revised the text in FSEIS Section 2.1.1.5 to note that the Applicant's use of pressurized, downflow IX columns would keep most of the radon trapped in pregnant lixiviant in the solution, rather than allow its release into the atmosphere of the CPP. This would minimize the potential radiation exposures of nearby occupational workers in the CPP.*

Comment: RP024-192

The commenter could not confirm the statement made in DSEIS Section 2.1.1.5 that, "The Applicant has committed that these discharges would meet all local, State, and Federal

requirements related to air quality as well as occupational health and safety" as appearing in Strata's license application or its responses to the NRC's Requests for Additional Information (RAIs). In addition, the commenter requested illumination on any local and state requirements for radon.

Response: *The DSEIS statement was based upon the cumulative individual commitments of the Applicant in its license application to 1) adhere to the terms of its Air Quality Permit issued by the WDEQ/AQD, which reflect State requirements as well as EPA's Federal regulations found at 40 CFR Part 61, the "National Emission Standards for Hazardous Air Pollutants" (NESHAPS), which include radon and other radionuclides; and 2) satisfy the requirements of NRC's radiation-exposure regulations found at 10 CFR Part 20, which relate to occupational and public health and safety. (See SEIS Sections 3.7.3.1 and 3.7.3.2 for a discussion of Federal and Wyoming air-quality rules). FSEIS Section 2.1.1.5 has been revised to read, "The Applicant has committed that its air discharges would meet all State requirements as continued in its Air Quality Permit as well as the NRC's 10 CFR Part 20 occupational health and safety requirements (Strata, 2012b)."*

Comment: RP024-194

The commenter noted that the statement in DSEIS Section 2.1.1.5, Airborne Emissions, that potential radioactive particulate emissions would be "mitigated by design features to prevent releases into the atmosphere as described in this section of the SEIS" could be made more specific.

Response: *FSEIS Section 2.1.1.5 has been revised to explain more clearly that the potential for radioactive-particle emissions would be mitigated by specific design features of the low-temperature, vacuum-dryer systems, which would mitigate releases into the atmosphere. The dryers are described in SEIS Section 2.1.1.2.*

B.5.9.8 References

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." NUREG–1437. Washington, DC: USNRC, Office of Nuclear Reactor Regulation. May 1996a. ADAMS Accession No. ML13106A241.

(US)NRC. "Staff Technical Position, Alternate Concentration Limits for Title II Uranium Mills." Washington, DC: USNRC. 1996b. ADAMS Accession No. ML091420242.

(US)NRC, U.S. Department of Defense, U.S. Department of Energy, and U.S. Environmental Protection Agency. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)." NUREG–1575. Washington, DC: USNRC. Rev. 1, 2000/Updates, 2001.

(US)NRC. "Standard Review Plan for In Situ Leach Uranium Extraction License Applications, Final Report." NUREG–1569. Washington, DC: USNRC. 2003a. ADAMS Accession No. ML032250177.

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(US)NRC. "Consolidated Decommissioning Guidance, Volumes 1, 2, and 3." NUREG–1757. Washington, DC: USNRC. Vols. 1 and 2, 2006. Vol. 3, 2012. ADAMS Accession No. ML12048A683.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "Staff Assessment of Ground Water Impacts from Previously Licensed In-Situ Uranium Recovery Facilities." Memorandum from C. Miller to Chairman Jaczko, et al. Washington, DC: USNRC. July 10, 2009d. ADAMS Accession No. ML091770385.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Rose, Arthur W., Herbert E. Hawkes, and John S. Webb. *Geochemistry of Mineral Exploration.* Second Edition. New York: Academic Press. 1979.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

WDEQ/AQD (Wyoming Department of Environmental Quality/Air Quality Division). *Permit to Construct, Air Quality Permit #12198*. Cheyenne, WY: WDEQ/AQD. 2011. ADAMS Accession No. ML112770430.

B.5.10 Financial Surety

Comment: RP032-059

The commenter stated that the subject of financial surety is of concern because of a history of failures in efforts to adequately restore contaminated aquifers at ISR facilities. Therefore, the commenter asked the NRC to provide a full and comparative analysis of each and every original financial surety required by the NRC or relevant State agencies for ISR facilities, the basis for the initial surety requirement, the license conditions requiring each of these surety arrangements, the adequacy of the surety estimates for funding the entirety of ground-water restoration and decommissioning the facility, how often updates were required of each surety at each ISR mining site, and the entity that provided funding for continuing restoration if a surety was not adequate to meet the costs of restoration and decommissioning.

Response: *The adequacy of the Applicant's financial assurance is evaluated as part of the NRC safety evaluation rather than as part of the environmental review. It is beyond the scope of this SEIS to provide an analysis of the operational history of ISRs. No changes were made to the SEIS beyond the information provided in this response.*

B.5.11 Alternatives

Comment: RP016-009

The commenter stated that the site identified as Alternative 3: North Ross Project was unrealistic due to the fact that the respective current landowner has stated that the Applicant would not be able to purchase the land required under this Alternative. Therefore, the commenter noted that the only reasonable alternatives are the Proposed Action and the No-Action Alternative.

Response: *Alternative 3 was considered to be a reasonable alternative under the site-specific environmental review given the Proposed Action and site conditions. Based on the purpose and need statement, Alternative 3 was found to be appropriate in this analysis, regardless of whether the land is currently available for purchase. As described in SEIS Section 2.1, the NRC staff considered a range of reasonable alternatives that included the Proposed Action and the No-Action Alternative. SEIS Section 2.2 also describes the other alternatives considered by the staff, and the reasons the alternatives were eliminated from detailed analysis. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP017-010

The commenter stated that Alternative 3, the North Ross project site, is preferable over the other alternatives. The commenter recommended that, if the North Ross project site is not chosen as the preferred alternative, mitigation measures be applied to the chosen alternative to match the level of resource protection described in Alternative 3. The commenter also stated that the protection of resources—including surface water, ground water, and visual and scenic resources—are all of concern for Devils Tower.

Response: *While the NRC staff considered possible reasonable alternatives to the Proposed Action in the SEIS as part of its NEPA analysis, the NRC only has the statutory authority to grant or deny the license application for the Proposed Action. The NRC cannot grant a license for a site analyzed as a reasonable alternative. That being said, overall impacts from both Alternative 1 (Proposed Action) and Alternative 3 (North Ross Site) are the same for surface water (SMALL), ground water (SMALL to MODERATE), and visual and scenic resource impacts (SMALL to MODERATE). The mitigation measures for ground water differ for Alternative 3 and Alternative 1 because of the difference in hydrology at the two sites. In Alternative 3, the depth to the unconfined shallow ground-water aquifer is greater, eliminating the need for a containment barrier wall (CBW). Due to the lack of a CBW that would be needed, the consumptive ground-water use under Alternative 3 would be less than the Proposed Action. With respect to surface water, storm-water control systems would be more involved at the North Ross site due to the two ephemeral drainages present, compared to only one stream at the Proposed Action site. Due to the topography surrounding the North Ross site, this Alternative would be less visible to neighboring properties and would shield them more from light pollution. However, under the Proposed Action, mitigation measures are in place to minimize these impacts. The Applicant proposes a number of mitigation measures under the Proposed Action*

to limit light pollution. These can be found in Section 4.10.1.1. The Applicant would also mitigate visual impacts by phasing the construction activities. The impacts to visual resources are also expected to be short-term. The Applicant performed an additional viewshed analysis demonstrating that the Ross Project would not be visible from the base of Devils Tower or from the Visitor's Center and that it would be unlikely that the Project area would be visible to climbers scaling the Monument due to the distance between the Project area and Devils Tower. (See SEIS Section 4.10.1.1 for more information).

The NRC may impose best management practices (BMPs), mitigation measures, and management actions that avoid and reduce environmental impacts through license conditions within the limits of the authority granted by Congress. The appropriate mitigation measures for the Proposed Action have been described in surface water, ground water, and visual and scenic resource impacts, which can be found in Sections 4.5.1 and 4.10.1. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-096

The commenter asked that Figure 2.6 be revised to more accurately reflect the schedule proposed by the Applicant (Strata, 2012a).

Response: *The NRC agrees with this request and has made the revisions to FSEIS Figure 2.6.*

Comment: RP024-376

The commenter noted that the DSEIS incorrectly suggested that the underlying aquifer would require restoration under Alternative 3: North Ross Project.

Response: *The NRC staff has revised the text in FSEIS Section 4.2.3 to clarify that the underlying aquifer would* not *require restoration under Alternative 3.*

Comment: RP032-061

The commenter stated that neither the ER nor the DSEIS contain evidence that other CPP location alternatives were screened for their environmental advantages and disadvantages prior to selecting the North Ross Project for detailed NEPA analysis. The commenter asked that the NRC explain why the Ross Project site and the North Ross Project site were deemed more reasonable than other potential CPP location alternatives, including the Barber site, and provide evidence that an environmentally-based screening process was used to identify environmentally preferred sites.

Response: *The Federal action and the purpose and need for the Federal action define the range of reasonable alternatives. By letter dated January 4, 2011, Strata submitted an application for an NRC Source and Byproduct Materials License that would allow Strata to construct and operate ISR wellfields and a processing facility at the proposed Ross Project area. Based upon the application, the NRC's Federal action is the decision to either grant or deny a license. The purpose and need for the proposed Federal action does consider the Applicant's goals and objectives to extract uranium from a particular location, which helps define reasonable alternatives to the proposed Federal action.*

Reasonable alternatives considered in a site-specific environmental review depend on the Federal action and site conditions, as required under 10 CFR Part 51. As stated in SEIS Section 2.1.3, the North Ross Project is included as Alternative 3 in this SEIS because of the expected differences in the depth of ground water between the north and south sites. However, the NRC staff's decision to analyze the North Ross Site in this SEIS, along with the Ross Project, is not an indication that the NRC staff determined that the North Ross Site or the Ross Project site have been deemed to be more reasonable locations for the CPP than other locations.

While the NRC staff considered reasonable alternatives to the Proposed Action in the environmental review, including the No-Action Alternative (Alternative 2), the only action within the NRC decisionmaking authority is to approve or not approve the Applicant's license application as submitted. The NRC under NEPA can examine a reasonable alternative to a proposed Federal action that the NRC may not have regulatory authority to impose. However, in order to be considered reasonable, an alternative must meet the purpose and need of the proposed project. The NRC will not accept an Applicant's proposed purpose and need if it has been unduly narrowed to prevent NEPA consideration of reasonable alternatives, but the NRC also allows deference to a business decision of an Applicant when making this determination. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP041-008

The commenter stated that the NRC improperly rejected the North Ross Project alternative and that the DSEIS failed to include a range of alternatives commensurate with NEPA's requirements. Stating that the alternatives consideration is the heart of the NEPA process, designed to allow the agency to consider options that would reduce impacts to the human environment, the commenter noted that the NRC considered only three alternatives—one of which is the legally required No-Action Alternative. The commenter pointed out that DSEIS Section 2.1.3 detailed reasons why Strata rejected the North Ross Project location, but that the DSEIS also gave reasons, in DSEIS Section 4.5.3, why Alternative 3 would reduce impacts to ground-water and surface-water resources, including the Little Missouri. The commenter stated that the FSEIS needed to fully disclose the rationales behind the NRC rejecting this reasonable—and perhaps more protective—alternative.

Response: *The proposed Federal action as well as the purpose and need for the Federal action define the range of reasonable alternatives. As a regulatory agency, the NRC's Federal action for the Ross Project, as defined in SEIS Section 1.3, is the decision to either grant or deny a license. As stated in SEIS Section 1.3, the purpose and need for the Proposed Action is to provide an option that allows the Applicant to recover uranium and to produce yellowcake at the Ross Project site. Alternative 3: North Ross Project, was not rejected; this Alternative was considered for detailed analysis (as explained in SEIS Section 2.1). The alternatives that were not considered for detailed analysis are listed in SEIS Section 2.2. SEIS Section 1.3 states the following about the NRC's role in determining the location of an ISR facility: "This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the AEA, as amended, or findings in the NEPA environmental analysis that would lead the NRC to reject a license application, the NRC has no role in a company's business decision to submit a license application to operate an ISR facility at a particular location."*

The NRC staff concluded, as noted in FSEIS Section 2.4, that the applicable environmental-monitoring program described in Section 6 and the proposed mitigation measures discussed in Section 4 would eliminate or substantially lessen the potential adverse environmental impacts associated with the Proposed Action. Therefore, the NRC staff's recommendation to the Commission related to the environmental aspects of the Proposed Action, as stated in SEIS Section 2.4, is that, unless safety issues mandate otherwise, a Source and Byproduct Materials License for the Proposed Action be issued as requested. The information requested to be added to the SEIS by the commenter is already included in the document. Therefore, no changes were made to the SEIS beyond the information provided in this response.

B.5.11.1 References

10 CFR Part 51. Title 10, "Energy," CFR, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions." Washington, DC: GPO.

(US)NRC (Nuclear Regulatory Commission). "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

B.5.12 Land Use

B.5.12.1 Ownership Issues, Surface, and Mineral Rights

Comment: RP024-372

The commenter requested clarification of DSEIS Section 4.2, where it is stated, "These potential impacts could be greater in the areas where there are higher percentages of private land ownership." The commenter wanted the purported difference in potential impacts to privately owned land versus public lands clarified.

Response: *The rationale behind the statement that the commenter quotes is the concept that, if public land were to be taken out of the public domain until the Ross Project has been fully decommissioned and restored, then any benefits that such public land offers would not be available until after Project decommissioning and site restoration (e.g., hunting, recreating). The NRC staff has revised the text in FSEIS Section 4.2 to clarify these different impacts.*

B.5.12.2 Amount of Land Affected and Type, Degree, and Duration of Potential Impacts

Comments: RP003-002; RP039-018

The commenters expressed concern about the loss of public land use as well as the risks to the public from uranium in general. The commenters were concerned about clean water, uncontaminated food supply, and increased cancer rates.

Response: *As outlined in FSEIS Section 3.2, the majority (79.4 percent) of the Ross Project area is privately owned. The public land that would be disturbed covers a small area and there is no public path to this land (i.e., private land surrounds the public land). As noted in many sections of the FSEIS, including SEIS 4.2.1.4, the Ross Project area would be fully reclaimed and restored. This means no contamination of either chemicals or radioactiviy would remain once the Project ceases. Therefore, the NRC concludes that the impacts to public lands, including livestock grazing and recreational opportunities, are SMALL. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-366

The commenter disagrees with the statement in DSEIS Section 3.12.2.1 that Oshoto has "only a very small population (approximately 50 persons)." The commenter stated that Oshoto is a ranching community composed of ranches scattered throughout the area and suggested revising the statement as follows: "The Ross Project area is adjacent to the unincorporated ranching community of Oshoto."

Response: *The NRC staff has revised the text in SEIS Section 3.12.2.1 for clarity regarding the nature of the Oshoto community.*

Comment: RP032-006

The commenter quoted a passage from the DSEIS's Executive Summary (page xxiv of the DSEIS), which stated:

> ***Construction*****:** Impacts would be SMALL. The Ross Project area comprises a total of 697 ha [1,721 ac] in the north half of the approximately 90-km^2 [56-mi^2] Lance District. This area is currently used for livestock grazing, wildlife habitat, some agriculture, and some oil production. A total of 113 ha [280 ac] of land, which represents 16 percent of the Ross Project area, would be disturbed during the construction of a CPP, surface impoundments, and other auxiliary structures such as storage areas and parking lots. The wellfields would be sequentially developed over the Ross Project lifecycle. All disturbed areas would be fenced and, thus, somewhat limit grazing by livestock, access by wildlife, and recreational opportunities.

The commenter then asked the size of the total land area, including wellfields, which would remain fenced during construction, so that the basis for a "SMALL" impact was merited.

Response: *As detailed in FSEIS Section 4.2.1.1, the maximum area that would be fenced at any time at the Ross Project would be less than 12 percent of the Project area (approximately 83 ha [205 ac]). The NRC considers a SMALL impact, for the reasons outlined in GEIS Section 4.3.1.1, because the amount of area disturbed by the construction would be very small in*

comparison to the available land, the majority of the area would not be fenced, grazing would be restricted from only a small portion of the available land, and the open spaces for hunting would be minimally impacted by the fencing. The Executive Summary is meant to be a succinct abridgment of the impacts of the Proposed Action and not an exhaustive comparison of the impacts of different Project activities. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-007

The commenter referred to a statement in the Executive Summary, "No new facilities would be constructed that would result in additional land disturbance during operation, although well drilling would continue as the wellfields would be sequentially developed." The commenter stated that the statement was misleading because wellfields and associated infrastructure would continue to be built throughout the majority of the operational period.

Response: *For the purposes of this FSEIS, "facility," as defined in the Executive Summary, means the portion of the Project that includes the CPP, chemical storage, warehouse, maintenance and administration buildings, impoundments and the deep-injection wells. Land disturbance would occur during operations through the construction of additional wellfields. Although this disturbance, which includes all of the construction activities associated with wellfield development, is included in the estimate of the total land that will be disturbed, the NRC agrees that the sequencing of land disturbance could be clarified in the Executive Summary. The FSEIS's Executive Summary has been revised to clarify this information.*

Comment: RP032-079

The commenter referred to Table 4.1 in the DSEIS, which presented a summary of the acreage disturbed by different activities during construction of the Ross Project, and asserted that the impacts to land use would be greater than the area of land that would be disturbed by the uranium-recovery facility and wellfields. In addition, the commenter questioned the estimate of impacts due to construction of the pads associated with the already-permitted five UIC Class I deep-disposal wells, which Table 4.1 lists as having individual areas of 76 m x 76 m [250 ft x 250 ft].

Response: *As outlined in FSEIS Section 4.2.1.1, the discussion of land-use impacts focuses on the total amount of land disturbed over the entire lifecycle of the Ross Project (approximately 16 percent), and the amount that would be fenced at any one time (approximately 12 percent). Although this land would be fenced, it would still be available for some current uses, such as oil and gas production, wildlife habitat, and some livestock grazing. As discussed in the GEIS, land-use impacts are judged to be SMALL when they range from 50 – 750 ha [120 – 1,900 ac], and the Ross Project area would be within that range.*

The NRC staff agrees with the commenter about the area of land disturbance resulting from five 76 m x 76 m [250 ft x 250 ft] pads constructed at the sites of the UIC Class I wells. As a result, Table 4.1 in the FSEIS has been corrected from 2 ha [5 ac] to 3 ha [7 ac] of land disturbance per deep-disposal well. Other references to the total land disturbance as a result of the pads constructed at the deep-disposal have also been corrected throughout the FSEIS. Potential impacts to geology and soils, ground water, and ecology that may be related to the acreage of

land disturbance are evaluted in FSEIS Sections 4.4, 4.5, and 4.6, respectively. (Comment No. RP032-023 also addresses this discrepancy and corrects the calculation.)

Comments: RP036-006; RP036-055

The commenters noted that, although there are no public roads to the BLM parcel, the parcel is accessible by foot through an adjacent State-owned parcel and, therefore, could be accessible to the public.

Response: *The NRC agrees with the commenter and has edited the text in FSEIS Section 3.2.2 to clarify that the BLM parcel is not accessible by public roads; however, the parcel is accessible by foot.*

Comment: RP036-019

The commenter noted that the land-use impacts would be less if the Ross Project were to be constructed at Alternative 3's North Site because there is no current dryland crop agriculture or livestock pasture there to be impacted (see DSEIS Section 4.2.3). The commenter requested that the NRC staff claify the land-use impacts between Alternatives 1 and 3, particularly in terms of agricultural land use and livestock pasture.

Response: *The text in FSEIS Section 4.2.3 has been clarified to note that there would be fewer impacts to dryland crop agriculture and livestock pasture in Alternative 3, but that, taken together, all impacts would be quite similar to Alternative 1. The NRC concluded that the land-use impacts in Alternative 3 would be generally the same as Alternative 1. Because of the proposed mitigation measures described in FSEIS Section 4.2.3, the land-use impacts resulting from both Alternatives would be SMALL, despite their small differences in the types of agricultural and habitat land use. FSEIS Section 4.2.3 has been edited for clarity.*

Comments: RP036-044; RP036-045

The commenter requested clarification regarding the future land use related to oil and gas development in the land-use cumulative-impacts study area. The commenter also requested that a reference be provided for the estimate of disturbance at each drilling location, as the cumulative-impacts aalysis of land use uses 1.11 ha [2.75 ac] as the average disturbance caused by drilling and well installation. However, the commenter stated that it is unclear whether that size refers to an existing well pad that has been partially decommissioned and the area reclaimed, or whether it refers to a pad surrounding a well that is in current production. The commenter further stated that the DSEIS does not adequately address the cumulative impacts of oil and gas development vis-à-vis long-term habitat fragmentation.

Response: *SEIS Section 5.4 explains that oil and gas production in the Ross Project area has decreased by 60 percent, and the BLM indicates that the number of producing wells will decrease in the coming years (BLM, 2009e). Therefore, the cumulative impacts from oil and gas activity will actually decrease in the future, compared to the 2010 levels included in the GEIS. The NRC has added a reference (BLM, 2009e) for the well-pad disturbance area in SEIS Section 5.4. In addition, the potential cumulative impacts to habitat fragmentation at and near the Ross Project are discussed in FSEIS Section 5.8.1, Terrestrial Ecology. Also see Comment Nos. RP036-017, RP036-021, RP036-027, RP036-032, RP036-047 through -051, and RP039-010.*

B.5.12.3 References

(US)BLM. *Update of the Task 2 Report for the Powder River Basin Coal Review Past and Present and Reasonably Foreseeable Development Activities.* Prepared for BLM High Plains District Office and Wyoming State Office. Fort Collins, CO: AECOM. 2009e. ADAMS Accession No. ML13014A657.

WWC Engineering. *Permit to Mine Application, Ross ISR Project, No. TFN 5 5/217: Submittal of Mine Plan Replacement Page per the Joint Stipulation Resolving EQC Docket No. 12-4803.* October 24, 2012. ADAMS Accession No. ML12299A040.

B.5.13 Transportation

Comments: RP003-003; RP005-001

The commenters noted concern about the increased traffic on local roads.

Response: *The NRC recognizes that there would be a significant increase in traffic on local roads, particularly during the 12 – 18 months of construction-related activities. As discussed in FSEIS Section 4.3.1.1, numerous mitigation measures would be initiated by the Applicant and Crook County to help reduce these impacts. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP005-003; RP005-004; RP005-005; RP006-001; RP008-001; RP009-001

The commenters expressed concern about the maintenance of local roads, given the increase in traffic.

Response: *As detailed in SEIS Section 4.3.1.1, the Applicant has entered into an MOU with Crook County that contains road maintenance commitments (Strata and Crook County, 2011). No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP016-004; RP032-080

The commenters requested additional information on the specific location of the CPP and whether moving the CPP to an alternate location could reduce transportation impacts.

Response: *The location of the CPP for the Proposed Action is shown in SEIS Figures 2.4 and 2.5. The NRC staff evaluated the transportation impacts of the Ross Project, including consideration of the number of vehicles that would be accessing the Project area per day. If the CPP were to be moved to an alternative location, that move would not diminish the number of vehicles per day associated with Project construction or operation. Furthermore, the Applicant needs to also consider the location of the CPP in conjuction with other site attributes (e.g., topography) as well as its location relative to the uranium-recovery wellfields. Although the Applicant's moving the CPP within the Ross Project area might slightly shorten the distance to the Plant for trips from some locations* inside *the Project area, it might not have any impact on trips originating from* outside *the Project area, as those vehicles might turn into the area at what would be the same access road and then take a right turn rather than a left turn to the CPP. Nonetheless, relocation of the CPP would not significantly alter the transportation impacts as*

the same number of vehicles would still travel the same Crook County and local roads. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP016-005; RP024-495

The commenters stated that the description of the New Haven and D Road roadbeds is correct in SEIS Section 3.3, but is inconsistent in SEIS Section 4.7.1.1.

Response: *The NRC agrees with the commenter and has revised SEIS Section 4.7.1.1 accordingly.*

Comment: RP016-006

The commenter provided several examples of mitigation measures proposed by the Applicant, but expressed concern over enforcement of mitigation measures.

Response: *The NRC notes that many of the mitigation measures are memorialized in the MOU with Crook County, signed by the Applicant on April 6, 2011; this MOU is an agreement that stays in place throughout the life of the Ross Project. The MOU requires a single point of authority contact with respect to road issues, dust control, enforcement of speed limits, education of employees, compliance with weight limits, etc. This MOU is an agreement that stays in place throughout the life of the Ross Project. Other mitigation techniques, e.g., daylight deliveries and construction activities, benefit safety for the company as well as maintain positive community relations. The Applicant has made these commitments in good faith and has stated they will implement these mitigation measures. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP017-025

The commenter advised that the NPS promotes valuable and laudable protection of soundscapes (the human perception of the natural acoustical environment in units managed by NPS) and suggested that the NPS Acoustical Toolbox may be of use in reducing noise impacts, levels, and vibration.

Response: *The noise mitigation measures committed to by the Applicant are found at SEIS 4.8.1.1 through 4.8.1.4. These measures include nighttime drilling and equipment operations restrictions; speed limit enforcement; road maintenance; daytime delivery of materials; and restrictions on compression brakes, loud engines and exhaust systems. Many of the concepts in the NPS Toolbox are incorporated into both the design of the CPP and in BMPs, such as keeping the doors closed to the CPP whenever possible, "first move forward" policies, etc. Carpooling will be encouraged to minimize the noise of commuting traffic. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-379

The commenter questioned the conclusion that the impacts to local roads would be MODERATE to LARGE, given the extensive mitigation measures proposed by the Applicant.

Response: *The GEIS rated the potential impacts to local roads as SMALL to MODERATE, based on the assumption that ISR activities in the Wyoming East Uranium Milling Region would*

not bring significant increases in daily traffic (NRC, 2009b, pg 4.3-3). The GEIS further states that "[r]oads with the lowest average annual traffic counts would have higher (MODERATE) traffic and potential infrastructure impacts." However, the GEIS based this analysis on a minimum all-vehicle traffic count in the region of 340 vehicles per day, and an average of 900 vehicles per day. Compared to 340 vehicles per day, the increase resulting from an ISR project that contributes 400 vehicles per day during construction, as is projected for the Ross Project, would represent a 117 percent increase in traffic. Because of the low traffic count near the Ross Project prior to construction, the increase is actually 400 percent. This is a significant increase compared to the analysis in the GEIS, and therefore the classification of LARGE is appropriate. After construction, when the traffic count decreases, the increase in traffic will be more similar to that discussed in the GEIS. Therefore the impact during operation was classified as SMALL to MODERATE. Responses to similar comments are included at Comment Nos. RP024-019, RP024-020, RP024-056, RP024-057, RP024-220, RP024-221, and RP024-472. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-380

The commenter requested that the mitigation measures in the SEIS include the potential implementation of a park-and-ride system.

Response: *The NRC staff included the possibility of employee carpooling or a park-and-ride system in SEIS Section 4.3.1.1. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP024-517; RP024-518

The commenter questioned the speed ranges cited for examination of noise levels on roads in the vicinty of the Project area. Specifically, the concern was that the speeds cited in a U.S Department of Transportation (USDOT) study for heavy trucks and passenger vehicles were much greater than the posted speed limits in the vicinity of the Ross Project area, which are “55 mi/hr” for cars and “45 mi/hr” for trucks on D Road and “45 mi/hr” on New Haven Road. The commenter also stated the the speed limit range for heavy trucks does not match the information presented in the USDOT report. The commenter suggested revising the statement to reflect noise levels at the current posted speed limits.

Response: *The NRC acknowledges that the upper end of the speed ranges cited as examples by the USDOT were greater than the speed limits in the vicinity of the Ross Project. However, the intent of the USDOT comparison, and its conclusion that heavy trucks generate more noise than passenger vehicles within the same speed range, is valid. The statement has been revised to cite the lower speed range, which is more consistent with the speed limits on D Road and New Haven Road. USDOT findings are consistent with the results of the noise level monitoring study conducted by the Applicant at nearby residences. In this study, the maximum recorded noise level at the residence was generated by a bentonite truck at 73.4 dBA. The text in FSEIS Section 3.8 has been revised to highlight the fact that the noise measured during the passing of a bentonite truck in the Applicant’s noise study was lower than either of the ranges for medium and heavy trucks.*

Comment: RP024-639

The commenter requested clarification on cumulative impacts to the transportation system within its designated study area, in particular, the local roads and the NRC's evaluation of the impacts of the Ross Project.

Response: *The cumulative impacts discussed under "Transportation," SEIS Section 5.5, include the impacts from all past, present and reasonably foreseeable future actions (RFFAs). These RFFAs include coal-bed methane (CBM) production projects, oil and gas production operations, surface-coal mining, uranium recovery, and other developments and projects. Given the number of planned and potential projects in the transportation cumulative-impacts study area, the NRC staff concluded that the impacts to the transportation system by the Ross Project itself, particularly to the local- and county-road network, would be MODERATE to LARGE. Even with the SMALL impacts to the Interstate-highway system, the cumulative impacts would be MODERATE due to the potentially significant increase in traffic volumes on local roads. The discussion in SEIS Section 5.5 has been clarified in the SEIS as a result of this comment.*

Comment: RP032-081

The commenter stated that the conclusion in DSEIS Section 4.3.1.2 that increasing the shipment of resins received at the CPP daily from one (as assumend in the GEIS) to four (as proposed by the Applicant) would not affect the risk of accidents is unsubstantiated. The commenter also stated that the increased risk arising from shipping four times the yellowcake output obtainable from the Ross Project alone is not even evaluated.

Response: *The SEIS does not state that there would be no increased risk arising from an increase in the number of resin shipments. The SEIS states that the risks in either case would be small. The NRC staff substantiates this conclusion in SEIS Section 4.3.1.2. This Section of the SEIS states, "[a]lthough the number of shipments proposed by the Applicant is higher than the one truck per day assumed in the GEIS, the other three factors evaluated in the GEIS would ensure that the probability of an accident that involves uranium-bearing IX resin would be small. Compliance with the applicable NRC and USDOT regulations for shipping IX resins would also reduce the risk of accidents involving these shipments." Regarding yellowcake shipments, the SEIS evaluates, in Section 4.3.1.2, the impacts from accidents resulting from shipments of yellowcake. The analysis assumes that there would be 75 shipments of yellowcake per year. This number of shipments of yellowcake is based on the maximum annual production rate, which includes yellowcake produced from toll milling. The SEIS concludes that impacts due to a potential accident involving the transportation of yellowcake during the operations phase of the Ross Project would be SMALL. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP024-240; RP035-027

The commenters asked for clarification regarding the transportation route from Interstate (I)-90 to the Ross Project area and asked that a figure be added to better illustrate the local transportation routes. One commenter wondered if the scale of DSEIS Figure 3.4 could be changed to a larger scale.

Response: *The description in SEIS Section 3.3 is correct. Although the Project site is north of I-90, one must first travel south from the Interstate to get to the proper access roads. From I-90 eastbound, one turns right on US 14/16 for approximately 1/3 of a mile, heading south, then turns west on WY 51 and continues to Bertha Road (County Road [CR] 12), and then turns north to pass under I-90. Please refer to SEIS Figure 2.1 for an additional illustration of the local transportation route. In preparing the SEIS, the NRC staff used the figures that are included in the license application. Thus, the two figures, FSEIS Figures 2.1 and 3.4, taken together provide the NRC's best possible maps. The respective scales could not be changed.*

Comment: RP036-020

The commenter requested clarification on the transportation mitigation measures, and whether or not the mitigation measures identified in SEIS Section 4.3.1.1 would be applied throughout the Project life.

Response: *As stated in SEIS Sections 4.3.1.2, 4.3.1.3 and 4.3.1.4, the mitigation measures outlined in SEIS Section 4.3.1.1 (construction) would also be implemented in subsequent Project phases. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP036-046

The commenter noted that the mitigation measures proposed for traffic impacts resulting from the Ross Project should be required of other projects in the Lance District.

Response: *Specifying mitigation measures for future projects in the vicinity is beyond the scope of the Ross Project SEIS. No changes were made to the SEIS beyond the information provided in this response.*

B.5.13.1 References

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

Strata (Strata Energy, Inc.) and Crook County. Memorandum of Understanding for Improvement and Maintenance of Crook County Roads Providing Access to the Ross ISR Project. Sundance, WY: Crook County. 2011. ADAM Accession No. ML111170303.

B.5.14 Geology and Soils

B.5.14.1 Soil Disturbance Concerns

Comment: RP032-084

The commenter asked for the NRC staff's justification underlying its statement in DSEIS Section 5.6 that "[t]he Nubeth area was restored and these past activities are consequently no longer relevant for the geology and soils cumulative-impacts analysis."

Response: *The area impacted by the Nubeth Joint Venture (Nubeth) research and development operation was small (approximately 3 ha [7 ac] and only one 5-spot well pattern). Final approval of Nubeth's decommissioning was granted by the appropriate regulatory agencies (including the NRC) in 1983 through 1986 (ND Resources, 1985a; ND Resources, 1985b). Nubeth's decommissioning included the removal and transport of 165 tons of contaminated soil offsite (ND Resources, 1985a). After the soil was removed, a gamma-radiation survey of the area was conducted; the survey encompassed Nubeth's processing facility, wellfields, and storage surface impoundment. Soil samples were collected and analyzed for radium-226 and uranium. Based upon the gamma survey and soil analyses, the levels of radiological parameters in soil from all areas were found to be within the local background. Following verification of the soil surveys by the NRC, stockpiled topsoil was applied and leveled, and the vegetation was reseeded. Based upon the final regulatory approval as well as the data that are available for review, the NRC staff concluded that there are currently no impacts to the local soils within the Ross Project area resulting from the Nubeth operation. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-085

The commenter referred to the following statement made in SEIS Section 5.6: "These impacts would dissipate quickly once site restoration is complete, within five years or less; therefore, the time period for this geology and soils cumulative-impacts evaluation is 19 years from the licensing of the Ross Project, or the year 2032." The commenter then inquired as to the basis for the NRC's conclusion that the geology and soils impacts by the Ross Project would dissipate quickly once the area has been reclaimed and restored. The commenter also asked for examples of geology and soil disturbances that are expected at the Ross Project in addition to previously observed instances in similar projects and their observed recovery times. In light of the data the commenter asks for, the commenter wondered whether a "five-year recovery buffer" is conservative.

Response: *The basis for the NRC's conclusion that impacts to geology and soils would dissipate quickly once area reclamation and restoration is complete is discussed in the impact assessment found in SEIS Section 4.4.1. Impacts to geology and soils would be SMALL after mitigation by meeting reclamation and restoration requirements. Site reclamation and restoration would be conducted by the Applicant both as individual wellfields are retired (after successful aquifer restoration) and during the final Project decommissioning phase. All potential impacts to the geology and local soils would be mitigated. Mitigation techniques that would be implemented by the Applicant include rapid topsoil replacement from soil piles (created during Project construction and wellfield development) as well as deliberate reseeding of disturbed land with native vegetation varieties. The Applicant would accomplish this restoration within one season of a wellfield's decommissioning. As described in SEIS Section 4.2.1.4 revegetation*

would be completed in accordance with an approved restoration action plan, which is required by Applicant's Permit to Mine issued by WDEQ. Oversight and approval by State regulatory agencies would ensure that the reclamation and restoration of all impacted soils within the Ross Project area are conducted in compliance with applicable requirements. In addition, Strata's license application included a RAP as Addendum 6.1-A to its TR, which would be implemented during Project decommissioning.

The five-year recovery buffer was selected by the NRC as a reasonable timeframe, which would allow the re-establishment of biota that assist in the development of a natural soil structure as well as regrowth of mature native vegetation. The NRC based the five-year timeframe on guidance by the University of Wyoming that notes successful reclamation may take up to five years in environments similar to that at the Ross Project (Norton and Strom, 2013). The timeframe for recovery of impacts to geology would be within the five-year timeframe since the impacts to geology are primarily from drill holes and wells and those impacts would be stabilized immediately upon plugging and abondoning the wells and holes. No changes were made to the SEIS beyond the information provided in this response.

B.5.14.2 Miscellaneous Geology and Soils Comments

Comments: RP015-003; RP026-001; RP026-002; RP028-002

The commenters expressed concern about impacts to the Madison aquifer from the UIC Class I deep-injection wells.

Response: *The NRC staff finds that impacts to the Madison-Formation aquifer are highly unlikely. As described in SEIS Section 3.4.1.2, the Deadwood and Flathead Formations that would receive liquid byproduct material through the UIC Class I injection wells are separated from the Madison Formation by at least 120 m [400 ft] of impermeable rock (i.e., the Red River Formation and the Icebox Shale). In addition to the confining properties of the 120 m [400 ft] of impermeable rock, the Applicant's monitoring of the injection pressure, as required by the UIC Class I Permit, would allow its detection of loss of the well casing's integrity, as discussed in SEIS Section 4.5.1.2. In the event that a UIC Class I well loses integrity, waste injection into that particular well would be suspended for well repair, thus preventing impacts to the aquifers above the Deadwood and Flathead Formations. The NRC staff has revised the text in SEIS Section 3.4.1.2 to provide further information regarding the thickness of rock separating the Madison Formation from the Deadwood and Flathead Formations. No change was made to the SEIS beyond the information provided in this response.*

Comments: RP024-247; RP024-248

The commenter suggested that the NRC staff add more detail in FSEIS Section 3.4.1.2 in its description of the thickness of the alternating layers within the lower and upper units of the Fox Hill Formation as well as the mineralization of the Fox Hills Formation and Lance Formation and the overlying confining unit.

Response: *To minimize redundancy in the SEIS text, the level of detail requested by the commenter is included in SEIS Section 3.5.3, "Ground Water," but it was not repeated in SEIS Section 3.4.1. A referral to SEIS Section 3.5.3 has been added to FSEIS Section 3.4.1.*

Comment: RP024-254

The commenter requested that the statements describing the six faults mapped by Buswell (1982) be revised. The commenter stated that more contemporary studies completed by the Applicant have invalidated the presence of the faults.

Response: *The NRC staff agrees with the comment and revised the text in SEIS Section 3.4.4 to revise the six faults mapped by Buswell (1982). The statement in FSEIS Section 3.4.4, "These faults are due to heterogeneity of the lithology among the shale and sandstone intervals within the upper Cretaceous Formations" has been revised to read, "Instead, it appears that the variability in stratigraphic elevations is due to heterogeneity in thickness of the various shale and sandstone intervals within the upper Cretaceous Formations."*

Comment: RP032-070

The commenter asserted that the data and discussion on ground-water quality in DSEIS Section 3.5.3 was vague, disconnected, and inadequate. The commenter specifically noted that data from existing wells completed in the Lance and Fox Hills aquifers outside of the previous Nubeth research and development project are not included in DSEIS Tables 3.6 and 3.7.

Response: *The NRC assumes that the commenter is referring to the water-quality data from the 29 water-supply wells that are outside the Ross Project area, since the Nubeth operation occupied only a small portion of the area of the Ross Project. The water-quality data from the 29 water-supply wells are described in FSEIS Section 3.5.3. Because the NRC received several public comments requesting the water-quality data from the 29 water-supply wells as well as water-quality data from Project monitoring wells, the NRC staff has added an Appendix C to the FSEIS, which includes all water-quality data generated by the Applicant through its sampling and analysis efforts. The map indicating the location of the 29 water-supply wells, which were monitored for ground-water quality by the Applicant for the license application and are proposed for continued monitoring during life of the Proposed Action, has been added as Figure 3.16 to FSEIS Section 3.5.3. Additional ground-water-quality data collected for the Nubeth project have also been added to FSEIS Table 3.7, and more supplemental discussion of the water-quality data after the aquifer restoration of the Nubeth project has been added to FSEIS Section 5.7.2. Please see the NRC staff's responses to Comment Nos. RP032-071, RP032-077, RP035-035, RP032-018, and RP032-072 for further information regarding ground-water quality in water-supply wells.*

Comment: RP032-008

The commenter noted the statement in the Executive Summary of the SEIS, "Operation: The impact [on ground water] would range from SMALL to MODERATE (depending upon whether excursions occur)." The commenter asked why, if a major excursion were to occur and remain undetected for an extended period, for example, would the impact not be "LARGE"?

Response: *The statement referenced by the commenter was taken from the Executive Summary of the DSEIS, which was intended to summarize SEIS Section 4.5.1. In, particular; the impacts of the Ross Project on ground-water quality throughout the Ross Project's lifecycle are presented in that SEIS Section. As described in SEIS Sections 2.1.1.1, 2.1.1.2, 4.5.1.2, and 4.5.1.4, monitoring wells would be placed around the perimeter of each wellfield as well as in the aquifers both overlying and underlying the target ore zone according to Condition Nos.*

10.13 and 11.5 in the Draft Source and Byproduct Materials License for the Ross Project (NRC, 2014b). This placement of ground-water wells is designed to provide timely detection of horizontal and vertical excursions (NRC, 2014b). In developing the required spacing between ground-water wells and the distance to the monitoring-well perimeter ring, the NRC has taken into account the respective aquifer's characteristics so as to minimize the possibility that an excursion would not be detected. Corrective actions indicated by Draft License Condition No. 11.5, in the event of an excursion, would ensure that the excursion impacts are mitigaged and do not become LARGE.

The texts in the SEIS Sections referenced above have been revised to clarify the NRC's analyses of ground-water impacts, including the parameters, methodology, and conclusions of these analyses. These revised texts discuss the requirements that would be included in the Final License, as currently included conditions in the Draft License for the Ross Project, which are intended to increase the probability that excursions would be detected in a timely manner (NRC, 2014b). In addition, the text now discusses the respective Draft Source and Byproduct Materials License Conditions intended to avert excursions more completely and describes the Draft License Conditions that discuss corrective actions were an excursion to occur. Please see the response to Comment No. RP032-033 for additional information on actions required of the Applicant that would mitigate the consequences of an excursion so that the impacts would not be LARGE, were the Ross Project to be licensed by the NRC.

B.5.14.3 References

Buswell, M.D. *Subsurface Geology of the Oshoto Uranium Deposit, Crook County, Wyoming,* M.S. Thesis, South Dakota School of Mines and Technology. Rapid City, SD: South Dakota School of Mines and Technology. 1982.

ND Resources. *Final Decommissioning Report for Nubeth R&D Solution Mining Project*. Crook County, WY: ND Resources, Inc. March 1985a. ADAMS Accession No. ML13274A058.

ND Resources. *Final Decommissioning Report for Nubeth R&D Solution Mining Project Volume 2*. Crook County, WY: ND Resources, Inc. March 1985b. ADAMS Accession No. ML13274A126.

Norton, Jay and Calvin Strom. *Reclamation Considerations for Oil and Gas Lease Contracts on Private Lands*. University of Wyoming Extension Reclamation Issue Team and the Wyoming Reclamation and Restoration Center. Laramie Wyoming, April 2013.

(US)NRC (Nuclear Regulatory Commission). "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

B.5.15 Ground-Water Resources

B.5.15.1 Concerns about ISR and Ground-Water Contamination

Comments: RP003-001; RP004-001; RP016-003; RP029-001

The commenters expressed concern about the potential for contamination of water resources in the neighborhood of the Ross Project.

Response: *NRC licensing and regulatory requirements for ISR facilities at 10 CFR Part 40, as well as NRC's requirement that licensees obtain all necessary permits and licenses from the appropriate regulatory authorities prior to operating their facility, generally serve to limit the potential for contaimination of water resources outside the areas of the wellfields in ore-zone aquifers. As described in SEIS Section 4.5, the impacts to water resources would be SMALL except for the MODERATE impacts to the ore-zone aquifer during the operation and restoration phase. The monitoring network for ground water, which would be required by the Source and Byproduct Materials License and, which is currently discussed in Draft License Condition Nos. 10.13 and 11.5 and also described in SEIS Sections 2.1.1.1 and 6.3.2, ensures prompt detection of leaks, spills, and excursions that may cause short-term impacts to water resources (NRC, 2014b). However, the mitigation measures described in Draft License Condition No. 11.5 would limit these impacts, and corrective actions would quickly remediate any releases (NRC, 2014b). NRC regulations require that ground-water quality within the production zone (i.e., the ore zone of the exempted aquifer) be returned to the standards identified in 10 CFR Part 40, Appendix A, Criterion 5B(5). Restoration of the ground water in the ore zone of a particular wellfield would eliminate that wellfield as a source of potential impacts to ground-water resources in the vicinity of the Ross Project. In addition, as described in the SEIS Section 2.1.1.7, the NRC requires the Applicant to post a finacial surety that would cover the anticipated and delayed aquifer-restoration costs (as well as facility decontamination and decommissioning costs) to comply with 10 CFR Part 40, Appendix A, Criterion (9). The NRC would review the adequacy of this instrument annually. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP024-013; RP024-161; RP024-169; RP024-170; RP024-425

The commenter recommended revising several statements in the DSEIS to include more specific information about: 1) the applicability of 10 CFR Part 40, Appendix A, Criterion 5B(5) to ground-water restoration and wellfield decommissioning; 2) the conclusions of the NRC staff with respect to its evaluation of ground-water impacts outside the exempted aquifers (NRC, 2009d); and 3) the role of wellfield balance in an operator's averting and detecting excursions. The commenter asked that the concept of "baseline conditions," in particular, be discussed further. The commenter also asked that the "purpose of aquifer restoration" be clarified in the FSEIS text. DSEIS Sections specifically identified by the commenter included the following: the Executive Summary, Section 2.1.1.3, and Section 4.5.1.2, Ground Water.

Response: *The NRC staff generally agrees with the suggested revisions. The following statement was added to FSEIS Section 4.5.1.3: "The purpose of aquifer restoration is to return the ground-water quality at a specified point of compliance, generally defined as the boundary of the exempted aquifer, to the ground-water protection standards specified at 10 CFR Part 40, Appendix A. The restoration of an exempted aquifer to meet the standards in Criterion 5B(5)(a) would ensure that a present or potential future USDW outside of the exempted aquifer would be*

protected (NRC, 2003b). Criterion 5B(5) of Appendix A requires that the concentration of a given hazardous constituent at the point of compliance must not exceed: 1) the NRC-approved concentration of that constituent in ground water (5B(5)(a)); 2) the respective numeric value in the table included in Paragraph 5C of Criterion 5B(6), if the specific constituent is listed in the table and if the level of the constituent is below the value listed (5B(5)(b)); or 3) an ACL the NRC establishes for the constituent (5B(5)(c)).”

The purpose of aquifer restoration has been clarified in FSEIS Section 2.1.13 in this way: “The purpose of aquifer restoration is to restore the ground-water quality at the point of compliance within the exempted aquifer to the ground-water protection standards specified at 10 CFR Part 40, Appendix A, Criterion 5B(5), so as to ensure no hazard to human health or the environment.” By Criterion 5B(4), the NRC staff can consider the existence of an exempted aquifer as defined by EPA but only in determinations of either 1) to exclude a constituent from the ground-water protection monitoring program, or 2) an ACL. Per definitions in Appendix A, the compliance period for which the ground-water protection monitoring program would be performed is from the time the Commission sets the ground-water protection standards until license termination. Thus, the ground-water protection program is continuous throughout operation, aquifer restoration, and possibly the post-closure (post-reclamation) period as determined by the NRC.

Historically, the NRC staff have assigned the point of compliance as referenced in 10 CFR Part 40, Appendix A, Criterion 5B(5) as the boundaries of the EPA-defined exempted aquifer; during operation, the wells used to monitor the point of compliance are those monitoring wells in the excursion-monitoring program. During site reclamation and restoration, until complete site closure, the wells that would be used by the Applicant to monitor the point of compliance are predominantly the wellfields’ post-licensing, pre-operational monitoring wells, although monitoring for compliance continues at the wells in the excursion-monitoring program. Criterion 5B(1) states that hazardous constituents entering the ground water from a licensed facility must not exceed the established ground-water protection standard beyond the point of compliance.

To achieve this requirement, Criterion 5B(6) provides that, although Criterion 5B(5)(a) poses no incremental hazard and Criterion 5B(5)(b) limits the hazards to acceptable levels, a licensee’s meeting these criteria might not be achievable. Therefore, the ground-water protection standard would then be based upon Criterion 5B(5)(c), an ACL. For the use of an ACL to be acceptable, the licensee must demonstrate that the ACL does not present a significant hazard.

Additional details about the ground-water protection standards as discussed in this response have been added to FSEIS Sections 2.1.1, 2.1.1.2, 4.5.1.2, and 4.5.1.3. A summary of the conclusions from the NRC’s review of ground-water impacts outside the exempted aquifers has been added to FSEIS Section 4.5.1.3 (NRC, 2009d). Please also see the NRC’s responses to Comments Nos. RP024-013, RP024-161, RP024-169, RP024-170, RP032-020, RP032-036, and RP032-041. Finally, the NRC has added Appendix B1 to this Appendix in the FSEIS to offer additional information on the NRC’s process for applying 10 CFR Part 40, Appendix A, Criteria 5B(5) in general and ACLs in particular.

Comment: RP024-221

The commenter recommended that the potential magnitude of ground-water impacts during the operation and aquifer-restoration phases of the Ross Project in DSEIS Section 2.4 be changed from “MODERATE” to “SMALL to MODERATE.”

Response: *Although the NRC staff concluded that ground-water impacts during operation and aquifer restoration would be SMALL to MODERATE (See SEIS Sections 4.5.1.2 and 4.5.1.3), the NRC staff does not agree that the commenter's suggested revision to the text in DSEIS Section 2.4 is appropriate. At the beginning of DSEIS Section 2.4, the text stated: "Potential adverse impacts to all environmental resource areas are expected to be SMALL, with the exception of… ." Therefore, following this statement, DSEIS Section 2.4 provided detailed information about resource areas with MODERATE and LARGE impacts and did not specifically address SMALL impacts.*

DSEIS Section 2.4 provided the NRC staff's preliminary recommendation regarding the Proposed Action, based on the findings in the DSEIS, and provided a detailed summary of the DSEIS findings. However, it should be noted that, Section 2.4 of the FSEIS provides the NRC staff's final recommendation regarding the Proposed Action but does not include the detailed summary of the SEIS findings, which were the subject of this comment. No changes to the SEIS were made beyond the information provided in this response.

Comment: RP032-025

The commenter highlighted the following statement in SEIS Section 2.1.1.2: "Comparison of the Applicant's expected concentration ranges of chemical constituents in the pregnant lixiviant with the typical lixiviant chemistry presented in Table 2.4-1 of the GEIS shows consistency between the Ross Project and the GEIS, except for higher concentrations of uranium and vanadium that could be present in the pregnant lixiviant at the Ross Project (Strata, 2011b; NRC, 2009b)." The commenter asked what would account for this discrepancy and would the varying concentrations be a result of differing ISR processing techniques, or would they result from differing ore bodies underlying the Ross Project and/or the Lance District from which uranium would be recovered? The commenter requested that the FSEIS provide a discussion of the environmental impacts of these higher concentrations relative to aquifer restoration, radiation exposures, and waste-disposal techniques.

Response: *The concentrations of uranium and vanadium in a lixiviant are primarily determined by the grade of the ore being recovered. Table 2.4-1 of the GEIS presents typical lixiviant concentrations from an alkaline lixiviant, which is the same type proposed for the Ross Project. The range of uranium and vanadium concentrations presented as "typical" for lixiviant in the GEIS are < 0.01 – 500 mg/L and < 0.01 – 100 mg/L, respectively. By comparison, the Applicant has estimated typical lixiviant would contain uranium and vanadium concentrations as < 1 – 700 mg/L and < 1 – 400 mg/L. Compared to the typical lixiviant described in the GEIS, the slightly higher estimated concentrations of uranium and vanadium in the Ross Project's lixiviant could indicate a higher than typical ore-grade.*

The higher range of concentrations estimated by the Applicant for lixiviant uranium and vanadium does not affect the NRC staff's environmental-impact assessment. Ground-water restoration would still remove the residual lixiviant from the wellfields such that, independent of the initial water quality, aquifer restoration would continue until the ground-water quality is returned to the standards identified in 10 CFR Part 40, Appendix A, Criterion 5B(5). Also, radiation exposures would be of minimal or no concern under normal facility-operating conditions because Project workers or the public would not generally come in contact with the lixiviant, regardless of the concentration of radioactive species it may contain. Please refer to the NRC staff's Ross Project SER Section 7.3.2 for a full analysis of potential radiation exposures in the case of accidents (NRC, 2014a), as well as SEIS Section 4.13.1, which

discusses the health and safety of occupational workers and the nearby public. The IX process proposed for the Ross Project at the CPP would remove the uranium and vanadium, as the two resources of economic value, from the lixiviant. After removal of these resources, the byproduct waste water from the process would be depleted in uranium and vanadium; and, therefore, the impacts of waste disposal are not related to the levels of uranium and vanadium initially in the lixiviant. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP032-043; RP032-044

The commenter noted that the DSEIS stated:

> If the oxidized (i.e. the more soluble) state is allowed to persist after uranium recovery is complete, metals and other constituents such as arsenic, selenium, molybdenum, uranium and vanadium could continue to leach and remain at elevated levels. To stabilize these constituent concentrations, the pre-operational oxidation state in the ore zone must be reestablished as much as possible.

The commenter also noted that the DSEIS stated:

> The Applicant would reinitiate the entire aquifer restoration phase if stabilization monitoring determines it is necessary. Both WDEQ and the NRC must review and approve all monitoring results before aquifer restoration would be considered to be complete.

The commenter then asked a series of questions regarding these statements:

1) For the purposes of the SEIS analysis, what has the NRC deemed to be “elevated levels” for the above-named constituents?

2) Would the NRC provide the range of historically and geotechnically indicated minimum, maximum, and most-likely (i.e., expected) elevated levels for each of the above named constituents that could result from the NRC's decision to grant a source and byproduct materials license, and discuss the scientific and technical basis for the information provided?

3) What is the pre-operational oxidation state in the proposed ore zones of the Ross Project and the potential Lance District development shown in SEIS Figure 2.6? Would the pre-operational oxidation state of these ore zones differ from their pre-licensing baseline state? If so, please identify the known and likely factors contributing to this difference. If not, why would the NRC not employ the measured, pre-licensing baseline oxidation state of the ore zone as the value to be reestablished as much as possible?

4) How much is “as much as possible”? What would be the metrics that the Applicant would employ, and/or those that the NRC would enforce, to establish that “the pre-operational oxidation state in the ore zone” has been reestablished as much as is possible? How would the NRC go about independently confirming or otherwise verifying the authenticity, accuracy, and completeness of the monitoring results that it would review and approve for the Ross Project and other potential Lance District development?

5) Would “as much as possible” be less that the TRVs specified in the Applicant's license application? If so, what elevated concentrations of the “dissolved metals” enumerated on page

2-34, line 33-34 of the SEIS would be deemed acceptable for terminating the aquifer-stabilization phase during aquifer restoration under the Ross Project's to-be-issued license?

6) What are the specific environmental-monitoring benchmarks that would determine whether it is necessary to "reinitiate the entire aquifer-restoration phase" for the Ross Project and the potential Lance District satellite areas? Which of these standards or criteria would be considered binding upon the NRC and the Applicant, and which could be abandoned or modified at will using the NRC's enforcement discretion? Would the NRC please provide the approved standard for each constituent that would be used to conduct this quarterly monitoring, and the standards for its determining that any adjacent, nonexempt aquifers are unaffected. What does "adjacent" mean in this context? Which official or officials within the NRC would be entrusted with the responsibility and authority to approve monitoring results and declare aquifer restoration to be complete?

7) For how long would the license, if issued, require the Applicant to monitor the ground water by quarterly sampling to demonstrate that the approved standard for each constituent were met and that any adjacent nonexempt aquifers were unaffected?

Response: *The quoted text from DSEIS Section 2.1.1.3 was taken from the GEIS, and, in both documents, the text is located within the discussion of stabilization following aquifer restoration. The subject paragraphs within DSEIS Section 2.1.1.3 that discussed aquifer stabilization have been revised to clarify the commitment made by the Applicant as stated in the license application, the review by the NRC staff of the Strata's license application in the SER, and the current conditions of the Draft License (Strata, 2011b; NRC, 2014a; NRC, 2014b). The specific revisions to these paragraphs are described in the responses to Comments Nos. RP024-172 and RP024-173.*

1) The statement in DSEIS Section 2.1.1.3 referred to by the commenter was a description of the aquifer-restoration process. The use of the phase, "elevated levels" in this statement in the FSEIS means concentrations of a given constituent that would not meet ground-water protection standards.

2) The NRC staff does not compile the routine monitoring data collected by ISR licensees during ground-water restoration that would be necessary to produce a range of historically and geotechnically indicated minimum, maximum, and most-likely concentrations of constituents during ground-water restoration. To perform the data analysis requested by the commenter would be outside the scope of this SEIS.

3) In the SEIS and the GEIS, the term "pre-operational" within the discussion of the pre-operational oxidation state is the same as the post-licensing, pre-operational state. Pre-operational oxidation state refers to the condition of low levels of oxygen in the ground water that exists before the introduction of lixiviant. As described in SEIS Section 2.1.1, the uranium ore is deposited in "roll-fronts," which form in geologic time when the geochemical condition within an aquifer changes from oxygenated to oxygen-deficient, which in turn causes uranium to precipitate as a coating on sand grains. As discussed in SEIS Section 2.1.1.3, other parameters that respond to the changing conditions caused by introduction of lixiviant are arsenic, selenium, molybdenum, and vanadium. The oxidation state can be inferred by the suite of elements and minerals present in the ground water during restoration.

4) and 5) The phrase, "as much as possible" in the subject statement, "To stabilize these constituent concentrations, the pre-operational oxidation state in the ore zone must be reestablished as much as possible," refers to the geochemical reactions within the aquifer. Attainment of the pre-operational oxidation state of the aquifer would result in a decrease in concentrations of those parameters that respond to oxidation conditions described in the response to part 3 of this comment. There is no quantitative measure to the phase "as much as possible" since the ground-water protection standards apply to constituent concentrations and not oxidation conditions. However, if an application for an ACL is received by the NRC, consistent with the "as low as reasonable achievable" philosophy, NRC staff would evaluate whether the licensee did as much as possible to achieve the lowest possible concentrations of water-quality parameters during ground-water restoration. The ground-water protection standards are discussed in FSEIS Sections 2.1.1.3 and 4.5.1.2 and in the responses to Comment Nos. RP024-013, RP024-161, RP024-169, RP024-170, RP032-020, RP032-036, and RP032-041.

6) and 7) Re-initiation of aquifer restoration would be required of the Applicant if the monitoring data were to show a lack of compliance with the ground-water protection standards approved by the NRC as described in SEIS Sections 2.1.1.3 and 4.5.1.2 and in the response to Comment No. RP032-020. In the SEIS, the term "adjacent aquifer," means "the aquifers immediately above, below, and surrounding the production aquifer." Condition No. 11.1 of the Draft License, an extract of which is provided in this Appendix B in response to Comment No. RP032-037, addresses monitoring, recording, and bookkeeping requirements. With respect to the requirements and extent of aquifer-restoration-stability monitoring, Condition No. 10.6 of the Draft License for the proposed Ross Project states the following:

> The licensee shall conduct sampling of the parameters included in the baseline [in this SEIS, "post-licensing, pre-operational"] sampling under LC 11.3 during the restoration stability period in accordance with Section 6.1.2.5 of the approved application. The sampling consists of eight samples during a 12 month period. The sampling shall include the specified production zone aquifer wells used to define the baseline [in this SEIS, "post-licensing, pre-operational"] levels. The Applicant shall continue the stability monitoring until the data show, for all parameters monitored, no statistically significant increasing trend, which would lead to an exceedance of the relevant standard in 10 CFR Part 40, Appendix A, Criterion 5B(5).

(Note that the words "will" and "shall" are used in the Draft License to denote specific requirements.)

As stated in GEIS Section 2.5, "The EPA, or the State authorized to implement the EPA's Underground Injection Control [UIC] program, reviews any aquifer-restoration plans for compliance with the applicable terms and conditions of the UIC-permit requirements. The NRC staff reviews any aquifer-restoration plans for compliance with the license to protect human health, safety, and the environment (NRC, 2009b)."

The NRC's Project Manager is responsible for reviewing and overseeing the NRC staff's review of the information submitted by the Applicant. The Decommissioning and Uranium Recovery Licensing Directorate within the Division of Waste Management and Environmental Protection is responsible for overseeing licensed uranium-recovery operations. As discussed in the responses to Comment Nos. RP024-013, RP024-161, RP024-169, RP024-170, and in SEIS Section 2.1.1.3, the compliance period for which the ground-water protection monitoring

program would be performed is from the time the Commission sets the ground-water protection standards until the respective license's termination. Thus, the ground-water protection program is continuous throughout the operation, aquifer-restoration, and possibly the post-closure (i.e., post-reclamation) phases as determined by the NRC.

Comment: RP035-034

The commenter suggested that the NRC staff revise the summary of the operational monitoring program presented in Table 6.1 of the SEIS in Section 6.2, Radiological Monitoring, to include the location, analytical parameter, sampling frequency, and number of sample locations as well as the expected range of values for radionuclides based upon pre-licensing, site-characterization water-quality data. It was noted that the data the commenter suggests adding to Table 6.1 are summarized in the DSEIS Section 3.5.3, Table 3.6.

Response: *In response to other comments (Comment Nos. RP032-018, RP032-070, RP032-071, RP032-072, RP032-077, and RP035-035) all data obtained by ground-water monitoring by several parties, including Nubeth, for all constituents have been added to the FSEIS as Appendix C. A map depicting the location of the 29 water-supply wells now discussed in FSEIS Section 3.5.3, which were also monitored for ground-water quality, has been added to the FSEIS as Figure 3.16. Other maps indicating the locations of monitoring wells that would be sampled within the Project area are shown on SEIS Figure 3.15 in Section 3.5.3. However, no changes were made to Table 6.1 as the information in that table and in Section 6 describe the operational environmental monitoring program. The data in Appendix C are a different set than data that will be accrued by the Applicant's monitoring the operation, aquifer restoration and decommissioning phases.*

Comment: RP039-011

The commenter requested that, if any polluted water would reach South Dakota and/or Montana, the NRC discuss those water-quality issues over the border as well as any "assimilative capacity concerns."

Response: *The direction of ground-water flow in all of the aquifers below the Ross Project area is to the west, toward the axis of the Powder River Basin. Therefore, water flow to South Dakota or Montana is not plausible. No changes were made to the SEIS beyond the information provided in this response.*

B.5.15.2 Importance of Water and Consumptive Water Use

Comment: RP024-652

The commenter requested clarification of the following statement in the DSEIS: "It is likely that ground-water drawdowns at the uranium-recovery wellfields in the Lance District would overlap spatially and temporally." The commenter pointed out that minor overlap is possible, but it would be imperative that the Applicant minimize the overlap so as to ensure that interference between wellfields does not occur.

Response: *The NRC staff agrees with the commenter's suggestion that, although minor spatial overlap of ground-water drawdown from different wellfields could potentially occur, the overlap would not be great. The schedule for development of the Ross Project shown in Figure 2.6 of*

the FSEIS suggests that operations at other uranium-recovery projects in the Lance District could occur concurrently with the Ross Project as well. In addition, as described in FSEIS Section 5.7.2, extrapolation of the ground-water model performed for the Ross Project indicated a potential for overlap of ground-water drawdowns from wellfield development. The NRC staff agrees that minimizing overlap would be necessary for the Applicant to conduct effective uranium recovery as well as successful ground-water restoration. The statement noted by the commenter was deleted from FSEIS Section 5.1.2 and has been replaced with a paragraph that provides the additional information contained in this response.

Comment: RP032-040

The commenter noted DSEIS Section 2.1.1.3 statement, "The Applicant proposes to use ground-water sweep selectively (for example, around the perimeter of the wellfield) rather than throughout the entire well module to minimize the consumptive use of ground water." The commenter asserted that the statement was ambiguous as to what the environmental baseline accounting unit for aquifer restoration would be. The commenter asked that the NRC clarify if that unit would be a wellfield, an entire well module, or a group of several well-modules.

Response: *The accounting unit is that component which would be used by the Applicant and the NRC to establish and apply water-protection standards. The Applicant proposed that "mine unit" be the accounting unit and, as noted in SEIS Section 2.1.1.1, the Applicant proposed that two such units would be established within the proposed Ross Project: one unit north and one unit south of the Little Missouri River. The NRC allows licensees flexibility in achieving the ground-water standards by their implementing various aquifer-restoration techniques. However, for the NRC staff to approve an aquifer restoration as successful (i.e., to accept that the aquifer's water quality meets all water-quality target concentrations), the entire unit must be fully restored.*

Note that the term "well module" was used in error in the DSEIS; the correct term is "wellfield module." The FSEIS has been revised to correct this error throughout its text. The NRC's approval of aquifer restoration would be done on a wellfield-by-wellfield basis or on a grouping of wellfields within a single unit.

B.5.15.2.1 Exploratory Drillholes, Abandoned Wells, and Old Mines

Comments: RP007-001; RP010-001; RP010-002; RP011-002; RP013-002; RP014-002; RP015-002; RP016-001; RP016-002; RP018-001; RP019-002; RP020-004; RP025-001; RP028-001; RP029-002; RP030-002; RP034-002; RP039-013; RP040-004; RP041-010; RP042-002

The above commenters all expressed concern regarding the thousands of abandoned drillholes from prior uranium-exploration activities in the Ross Project area. Many commenters stated that these drillholes should be plugged prior to operation of the Ross Project, so that ground-water contamination would not occur.

Response: *Condition No. 10.12 of the Draft Source and Byproduct Materials License would require the Applicant to attempt to locate all historical drillholes (i.e., boreholes) within the perimeter-well ring at each wellfield and properly plug (i.e., properly "abandon") the drillholes prior to operation. In the unlikely event that Strata does not locate all the abandoned drillholes, monitoring wells would be installed to detect any excursions that might occur, including those*

that might occur as a result of unplugged drillholes (see FSEIS Section 2.1.1.1) (NRC, 2014b). In response to this comment, FSEIS Section 4.5.1.2 has been revised to provide additional information regarding the requirements for plugging and abandoning historic drillholes in the Ross Project area.

Comment: RP024-031

The commenter questioned the statement in the DSEIS's Executive Summary, "After uranium recovery operation is complete, unidentified, improperly abandoned wells (i.e., from previous subsurface explorations not associated with the Applicant or its activities) could continue to impact aquifers above the ore-zone and adjacent aquifers by proving hydrologic connections between aquifers." The commenter noted that Condition No. 10.12 of the Draft Source and Byproduct Materials License requires the Applicant to locate and abandon all historical drillholes located within the perimeter-well ring for each wellfield (NRC, 2014b). In addition, the commenter pointed out that the Applicant committed in its license application to properly plug and abandon all drillholes and wells from its own activities (i.e., drillholes from ore zone-delineation efforts and geotechnical investigations, ground-water monitoring wells used for pre-licensing site characterization, and injection and recovery wells from uranium-recovery activities) within the perimeter-well ring of each wellfield as well as to conduct pumping tests that would verify hydrologic isolation in each wellfield prior to each wellfield's operation. Therefore, the commenter stated that the potential impacts from historical drillholes would be less under the Proposed Action than the No-Action Alternative (i.e., Alternative 2).

Response: *The commenter's statement that the potential environmental impacts from historical drillholes would be less under the Proposed Action than the No-Action Alternative is not relevant to the SEIS text in the Executive Summary, as the information in the Summary is meant to be a succinct abridgment of the impacts of the Proposed Action and not an exhaustive comparison of the impacts of different Alternatives. The impacts of the historical drillholes under the Proposed Action and other alternatives are discussed in SEIS Sections 4.4.1.4, 4.4.2, and 4.4.3. Potential impacts to water quality by movement of lixiviant through improperly abandoned drillholes are discussed in SEIS Section 4.5.1. The commenter is correct, however, that Draft License Condition No. 10.12 does address historical drillholes.*

*Draft License Condition No. 10.12 states that, "Prior to conducting tests for a hydrologic-test data package, the [L]icensee will attempt to locate and abandon all historical drillholes located within the perimeter-well ring for the [w]ellfield. The [L]icensee will document such efforts to identify and properly abandon all drillholes in the hydrologic-test data package." The NRC staff notes that the commenter indicated that the Applicant would be required to locate and abandon all historical drillholes located within the perimeter-well ring for each wellfield, whereas Draft License Condition No. 10.12 states that the Applicant "*will attempt *to locate and abandon all historical drillholes located within the perimeter-well ring for the [w]ellfield [emphasis added]." Therefore, when the NRC staff analyzed the potential impacts to ground-water resources during the decommissioning phase in SEIS Section 4.5.1.4, the NRC conservatively accounted for the potential for unidentified, improperly abandoned historical wells to be present. No changes were made to the SEIS beyond the information provided in this response. However, in preparing the FSEIS, the NRC staff has included more of the applicable, explicit references to the specific numbers of the Draft License Conditions, including Draft License Condition No. 10.12. The NRC was finalizing the Draft License at the same time that the DSEIS was in the final publication-review stage, and it was not available for explicit citation as it was for the FSEIS.*

Comment: RP024-176

The commenter noted the following statement in DSEIS Section 2.1.1.3: "All injection, recovery, and monitoring wells and drillholes would be plugged and abandoned in place according to applicable regulations after ground-water restoration is approved by the NRC and WDEQ (WDEQ/LQD, 2005)." The commenter suggested that the NRC staff delete "and drillholes" from the statement, because under Condition No. 10.12 of the Draft Source and Byproduct Materials License, all drillholes associated with the Applicant's activities (i.e., drillholes from ore-body delineation efforts and geotechnical investigations), as well as all historical drillholes within the perimeter-well ring of each wellfield, would be plugged and abandoned prior to uranium-recovery operation (NRC, 2014b).

Response: *The NRC staff has revised the FSEIS text in Section 2.1.1.3 by deleting the phrase, "and drillholes" from the noted statement.*

Comment: RP032-060

The commenter asked how many previous drillholes are believed or known to exist on the Ross Project site and the area encompassed by future potential Lance District development. The commenter also asked how many of these holes have been located and plugged to-date (May 9, 2013) by the Applicant.

Response: *Previous drillholes known to exist within the Ross Project site are due to the Nubeth pilot project. The total number of Nubeth exploration holes known to exist within the Ross Project site is 1,483 (Strata, 2014c). As of May 9, 2013, 625 Nubeth exploratory drillholes have been located and 86 have been plugged by Strata (Strata, 2014c). The requested information for the future potential Lance District development is not currently available and is outside the scope of the license application. No changes were made to the SEIS beyond the information provided in this response.*

B.5.15.2.2 Control of Operational Impacts, Excursion of ISR Solutions, and History

Comments: RP011-003; RP012-002; RP013-005; RP014-004; RP015-004; RP019-004; RP020-005; RP020-006; RP021-002; RP022-001; RP023-004; RP029-003; RP030-004; RP031-001; RP034-004; RP039-015; RP040-006; RP041-003; RP041-004; RP041-005; RP042-004

The commenters expressed concern regarding the record of spills, excursions, surface-impoundment and pipeline leaks, spills, and lixiviant excursions at ISR facilities. In addition, they also expressed concern regarding the potential failure of aquifer restoration, noting that no other uranium-recovery project has yet to restore an aquifer to pre-operational water quality.

Response: *As discussed in GEIS Section 2.11.2, the NRC staff has reviewed the record of spills and leaks at operating ISR facilities as well as the requirements for an operator's reporting incidents of releases and implementing corrective actions (NRC, 2009b). The analysis of impacts to soil, surface water, and shallow ground water from spills and leaks are provided in the SEIS Sections 4.4.1.2 and 4.5.1.2. As described in these sections of the SEIS, impacts to soil and water resources would be mitigated by the operational controls that would be in place to reduce the likelihood of releases, in addition to the requirements for reporting and taking corrective action. The NRC's assessment determined that the impacts that could result from*

leaks and spills from pipes and from the surface impoundments at the Ross Project would be SMALL.

The NRC staff has compiled information on the history of excursions in GEIS Section 2.11.4. SEIS Sections 2.1.1.1 and 2.1.1.2 describe the operating practices that the NRC requires of licensees that are designed to minimize the likelihood of impacts from excursions. The history of excursions at licensed ISR facilities was considered in the impact analysis in SEIS Section 4.5.1.2. Please see the NRC's responses to Comment Nos.032-030, 032-033, 032-034, 032-037, 032-042, and 035-041 for additional information on required mitigation measures to avert excursions and correct them, if they were to occur.

The NRC staff's conclusions regarding potential environmental impacts to ground water following aquifer restoration for the proposed Ross Project are provided in SEIS Section 4.5.1.3. The NRC is aware of the potential for some water-quality constituents in the ground water within the ore zone of the exempted aquifer to be greater than the post-licensing, pre-operational concentrations (NRC, 2009d). However, the constituent concentrations within the uranium-recovery area at the completion of aquifer restoration must meet the standards listed in 10 CFR Part 40, Appendix A, Criterion 5B(5). These standards are described in the NRC's responses to Comment Nos. RP032-004, RP041-006, RP024-162, RP024-013, RP024-161, RP024-169, RP024-170, RP024-425, and RP032-020. As discussed in SEIS Section 2.1.1.1, a licensee is required to have a UIC Class III Permit from the EPA or an EPA-authorized State agency before operating NRC-licensed uranium-recovery wellfields. This permit must exempt that portion of the aquifer that will undergo uranium recovery from the classification as a USDW; therefore, restoration of the exempted aquifer is performed for the purpose of protecting the ground water outside the exempted aquifer.

In response to the commenters concerns that no uranium-recovery project has yet to restore an aquifer to pre-operational water quality, the NRC staff examined ground-water data from the NRC-licensed ISR facilities for which NRC recently approved aquifer restoration (COGEMA's Irigaray/Christensen Ranch facility, Power Resources Inc.'s Smith Ranch/Highland Uranium Project facility, and Crow Butte Resources' Crow Butte facility). The NRC staff has approved 11 wellfield restorations at these 3 facilities. Aquifer-restoration activities are also continuing at wellfields for which restoration has not yet been approved by the NRC. The aquifer-restoration data show that pre-operational concentrations are attainable for many parameters (i.e., 50 to 70 percent of the 35 parameters commonly monitored), but the pre-operational concentrations have not been attained for other constituents; in particular, the major and trace cations with solubilities most susceptible to the oxidation state of the aquifer water (i.e., iron, manganese, arsenic, selenium, uranium, and vanadium) as well as radium-226 (NRC, 2009c). However, for the approved aquifer restorations, ground-water quality in the exempted aquifer met all regulatory standards for the respective State's or EPA's UIC program and had the water-quality values designated for its class of use prior to uranium-recovery operation. In addition, water-quality modeling shows that concentrations decrease over time due to natural attenuation and that drinking-water standards are met at the perimeter of the exempted aquifer. Therefore, the impacts to ground water outside of the exempted aquifer for each of the approved aquifer restorations do not pose a risk to human health and the environment. This information on NRC-approved aquifer restorations at the NRC-licensed uranium-recovery facilities has been added to FSEIS Section 4.5.1.3.

Comment: RP032-064

The commenter referenced the following statement in the SEIS Section 2.1.1.2: "If a vertical excursion occurs, then the Applicant's injection of lixiviant would cease, and for any excursion, corrective action would be initiated." The commenter questioned why the Conditions in the Draft Source and Byproduct Materials License for the Ross Project would require cessation of lixiviant injection only in the case of a "vertical excursion," rather than all excursions (NRC, 2014b).

Response: *As described in SEIS Section 2.1.1.2, GEIS Section 4.11.4 documented that vertical excursions tend to be more difficult to recover than horizontal excursions. Historically, the source of a vertical excursion is something other than built-up pressure, which is generally the source of horizontal excursion and an attribute of the uranium-recovery process that can be readily adjusted (i.e., the pressure relieved). Pressure relief would reverse horizontal excursions. The probable cause for a vertical excursion is a failed casing in a nearby injection well. Therefore, immediate cessation of lixiviant injection is a prudent corrective action to prevent more from escaping. For a horizontal excursion, although cessation of injection is not a requirement, reducing the rate of injection might be performed in combination with increased pumping. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-033

The commenter referred to the following statement in SEIS Section 2.1.1.2: "If an excursion cannot be recovered within 60 days of confirmation (measured by a concentration of more than 20 percent of any excursion indicator), the Applicant would be required either to terminate lixiviant injection within the wellfield until aquifer cleanup is complete (for horizontal excursions) or to increase the surety for the ISR project by an amount sufficient to cover the full third-party cost of correcting and remediating the excursion."

Then the commenter asked several questions about excursion confirmation and subsequent actions: Is confirmation of an excursion the same as initially detecting it? What constitutes confirmation of an excursion for the purpose of triggering a licensee's 24-hour notice requirement to the NRC? How soon after confirmation of a vertical excursion would lixiviant injection be required to cease? How soon following the 60-day period for retrieving a horizontal excursion would the Applicant have to decide whether to terminate lixiviant injection within the wellfield or increase the surety?

In addition, the commenter noted that SEIS Figure 2.4 showed contiguous and overlapping wellfields and asked questions about exursions as applied to adjacent wellfields: If a horizontal excursion affects a neighboring wellfield that is under construction or an area designated for future wellfield development, would that count as an excursion? Can a hydrologic cone of depression designed to prevent lixiviant excursions encompass multiple, contiguous wellfields such that the area monitored for excursion becomes enlarged to cover multiple wellfields?

Response: *Responses to the commenter's questions about excursion confirmation and subsequent actions are provided in the NRC staff's responses to Comment Nos. RP032-037 and RP0032-042 as well as in FSEIS Sections 2.1.1.2 and 4.5.1.2. These responses describe the criteria for the Applicant's monitoring for and detecting, confirming, and correcting excursions as set forth in Condition No. 11.5 of the Draft Source and Byproduct Materials License (NRC, 2014b). For purposes of this SEIS, confirmation is equivalent to verification of*

the UCL exceedence for two of the three sampling events associated with the initial detection of exceedence. If the initial detection is confirmed (verified) by the second or third sampling event, then the well is placed on excursion status, which begins the time period for the license conditions' reporting requirements.

As described in the NRC staff's response to Comment No. RP032-064, after a well is placed on excursion status for a vertical excursion, by license condition, the Applicant will cease production immediately in the area surrounding that particular well. The production in that area will not be re-initiated until the Applicant can demonstrate to the satisfaction of the NRC staff that the continued operations are safe. Injection of lixiviant would be stopped at 60 days if the horizontal excursion has not been corrected or the surety is not adjusted to account for any corrective actions that will be needed.

As established in SEIS Section 2.1.1.1, the Applicant proposed perimeter monitoring wells at a distance of approximately 120 m [400 ft] from the edge of each wellfield to allow the detection of potential horizontal excursions in advance of an excursion affecting the surrounding aquifer. A horizontal excursion is the movement of lixiviant outside of the perimeter-well ring of a wellfield regardless of the use or planned use of the adjoining area. For abutting wellfields that are sequentially operated, the perimeter-well ring for the initial wellfield would likely contain temporary wells in the area in which the two wellfields abut. After production begins in the abutting wellfield, excursion monitoring at the temporary monitoring wells in the initial wellfield perimeter well ring would be discontinued and a new perimeter-well ring would be established combining the remaining wells in the initial wellfield perimeter-well ring with new wells in the perimeter-well ring surrounding the abutting wellfield. If a temporary well for the initial wellfield goes on excursion status during its sole operation, that area would be incorporated into the combined wellfield when the abutting wellfield begins operation and thus the excursion status for that temporary well would no longer be applicable. The area between abutting wellfields would become part of the wellfield area and subject to restoration requirements. If an excursion were to occur in a temporary well or extend to an area of a subsequent wellfield prior to or during its construction, the water quality of that area would not be included in the post-licensing, pre-operational data for the subsequent wellfield. The Applicant would be required to obtain sufficient, representative samples from areas unaffected by any operations for any subsequent operations.

Finally, the commenter raises the point of potential mutual interference of abutting and/or nearby wellfields. Mutual interference occurs when the cone of depression from operations at one wellfield affects ground-water flow at another wellfield. Mutual interference would not result in a large excursion over multiple wellfields; however, it may result in the potential migration of ground water from an abutting wellfield, though that abutting wellfield has maintained its inward gradient. In those cases, the mutual interference may eventually result in an excursion at the abutting wellfield. This situation would be more likely to occur when one wellfield is in restoration and the bleed (and resulting cone of depression) is larger than the normal bleed at a nearby wellfield in operation or another phase of restoration. No matter what the cause for the excursion, the Applicant would be required to perform corrective actions for an excursion whether or not it occurred during operation or restoration, or, attributed to pumping at that particular wellfield or by mutual interference. In determining the appropriate corrective action, the Applicant would have to evaluate the root causes of the excursion.

No changes were made to the SEIS beyond the information provided in this response.

B.5.15.2.3 Aquifer Exemptions and Post-Licensing, Pre-Operational Water Quality

Comment: RP024-143

The commenter recommended clarifying that while the aquifer exemption requires EPA approval as an amendment to Wyoming's State plan under the Safe Drinking Water Act (SDWA), the UIC wells are approved solely by WDEQ/WQD as the State has "primacy" for such wells under the same statute.

Response: *The NRC has revised the "What are underground injection control permits" text box in SEIS Section 2.1.1.1 to clarify the regulatory requirements for aquifer exemptions and UIC wells as a result of this comment.*

Comments: RP032-003; RP041-012

The commenters referenced the following statement taken from the DSEIS Executive Summary: "The ore zone [OZ] is that portion of the aquifer that has been permanently exempted by the EPA from requirements as an underground source of drinking water under the Safe Drinking Water Act [SDWA]." One commenter noted that the geographic extent and boundaries of the OZ that has been permanently exempted is not given with any precision in the SEIS and that the NRC has not disclosed the status of the aquifer exemption. Another commenter asked that the SEIS disclose the status of the aquifer exemption process, fully describe the scope of the exemption (preferably through a map or diagram in the SEIS), and explain how the exemption does or does not affect how the NRC determines and assesses impacts related to water quality and quantity. The commenters asked that the FSEIS describe how the aquifer exemption will be expanded or if additional aquifer exemptions will be needed for future ISR projects in the Lance District. One commenter asked if the NRC is aware of any SDWA exemption proposed or granted that covers some or all of the potential satellite areas discussed in the SEIS. The commenter also asked for the basis of the Applicant's confidence in building a CPP facility that is four times the size of that needed for the Ross Project and twice the size of the facility analyzed in the GEIS.

Response: *At the time the DSEIS was issued, the aquifer exemption had not been granted. The aquifer exemption process is now described in FSEIS Section 2.1.1.1. The Applicant submitted the Statement of Basis for exemption as a source of drinking water and reclassification of the portion of the aquifer proposed for uranium recovery as Appendix D12 to its application submitted to WDEQ/LQD for a Permit to Mine. On May 15, 2013, the EPA approved the exemption of the aquifer per the request by WDEQ in accordance with the Underground Injection Program and the Memorandum of Agreement (MOA) between Wyoming and the EPA (EPA, 2013). Table 1.2 in the FSEIS has been updated to include the status of reclassification and exemption approval. The horizontal area of the exempted aquifer is defined as the area within the perimeter monitoring wells around each wellfield plus an approximately 30-m [100-ft] buffer outside the monitoring wells (EPA, 2013). This area of the exempted aquifer is approximately the area of the wellfields that contains the allowance for future drilling as shown in SEIS Figure 2.4. The NRC would require an aquifer exemption for amendments to the license boundary to include satellite areas. The EPA specifies that the exemption approved on May 15, 2013, only applies to the Ross Project's location and area described in the Applicant's Application to WDEQ for its Permit to Mine. Because Condition No. 12.1 in the Draft Source and Byproduct Materials License for the proposed Ross Project would require clear delineation of the approved aquifer-exemption areas and boundaries for the Class III wells*

before approving operations at any wellfield, the DSEIS considered an approved exemption in the impact analysis (NRC, 2014b). In addition to updating SEIS Table 1.2, NRC has revised the FSEIS, adding to Section 2.1.1.1 the new sentence "However, the maximum area of the wellfields would not exceed the total area of the exempted aquifer; this area has been approved as 500 feet from the outer edges of the wellfields indicated in SEIS Figure 2.4 (EPA, 2013)". The NRC staff is not aware of any SDWA exemption proposed or granted that covers some or all of the potential satellite areas discussed in the SEIS. The NRC does not assess applicants' confidence in the economic viability of their proposed projects.

Comment: RP032-018

The commenter requested a map depicting the name, location, and targeted aquifers of all pre-existing wells and monitoring wells that contributed pre-licensing, site-characterization water-quality data. The commenter also requested information on the specific regulatory function of these pre-licensing, site-characterization measurements of water quality in the NRC's regulatory scheme to guard against aquifer degradation. The commenter asked if the pre-licensing water quality would be the standard by which lixiviant "excursions" outside the OZ and/or aquifer restoration to "pre-mining" conditions would be judged under the proposed license.

Response: *As described in NRC's* Standard Review Plan for In-Situ Leach Uranium Extraction License Applications*, NUREG–1569 (NRC, 2003a), a license applicant, in support of its application, must provide pre-licensing, site-characterization information, including water-quality data from and in the vicinity of the site. NUREG–1569 provides an NRC-accepted list of constituents to be sampled and analyzed for determining water quality and a method for applicants to propose a list of constituents that may be more tailored to a particular location. NRC guidance dictates that, for an applicant to determine pre-licensing, site-characterization ground-water quality, at least four sets of samples, spaced sufficiently in time, should be collected and analyzed for each constituent. As documented in SEIS Sections 3.5.3 and 5.7.2, the pre-licensing, site-characterization water quality would be compared with water-quality standards and would be used to define pre-licensing, site-characterization conditions and to identify the cumulative impacts of uranium-recovery activities. In addition, the pre-licensing water-quality data are used to determine if the water quality varies seasonally. Also, in the event of a spill or MIT failure, the pre-licensing data can be used to determine when corrective actions are complete.*

The pre-licensing, site-characterization water-quality data would not be used in an assessment of potential excursions. The water-quality data that would be used in that assessment would be collected from monitoring wells installed around, above, and below individual wellfields at a given site after *licensing but* before *injection of lixiviant commences (i.e., post-licensing, pre-operational data) (see the NRC's responses to Comment Nos. RP032-019 and RP032-031).*

The Applicant has provided pre-licensing, site-characterization water-quality data, which are described in SEIS Section 3.5.3 and included in their entirety as Appendix C to the FSEIS. A map of the monitoring wells installed by the Applicant for pre-licensing, site-characterization water-quality data is presented in Section 3.5.3 as Figure 3.14. A map indicating the locations of the water-supply wells within a 3-km [2-mi] radius of the Ross Project, those that have been sampled for water quality, has been added to the FSEIS in Section 3.5.3 as Figure 3.16. The aquifers sampled by the wells are described in SEIS Section 3.5.3. The well designations (i.e., names or numbers) are noted in Figure 3.16 and described in the text of SEIS Section 3.5.3.

The NRC staff has provided all of the pre-licensing, site-characterization water-quality data collected by the Applicant in Appendix C for the public's ease in reading and understanding the FSEIS.

Comments: RP032-019; RP032-031

The commenter referenced the following statement from DSEIS Section 2.1.1.1:

> Prior to commencing ISR operations, these wells would allow sampling and analysis of ground water and, in this SEIS, this type of monitoring is called "post-licensing, pre-operational." The resulting post-licensing, pre-operational data would be used to determine concentration-based levels that would permit identification of any excursions from the respective wellfields; these would be called the Ross Project's upper control limits (UCLs). These post-licensing, pre-operational baseline values would be established for each separate wellfield (and they would be codified in the Applicant's NRC license).

The commenter asked:

1) What is the scientific and technical rationale for NRC's using post-licensing, pre-operational data, rather than pre-licensing measurements, to establish baseline water-quality values to detect excursions?

2) How is the potential problem avoided where each operational wellfield would degrade the post-licensing, pre-operational baseline water quality of subsequent downgradient monitoring wells targeting the same aquifers?

3) What assurance is there that the "post-licensing, pre-operational baseline" water quality is not impacted by the construction of other injection and recovery wells as well as by previous and ongoing exploratory drilling?

4) What information on the sequence for installing monitoring wells and establishing water-quality indicators that are used to detect excursions can the NRC provide?

In addition, the commenter inquired about additional methods used to detect excursions. The commenter asked additional questions related to ground-water monitoring required to detect an excursion by referencing the information provided in SEIS Section 2.1.1.1, "Water-quality indicators in the ground water from monitoring wells that would be established after wellfield installation would also be used to detect whether an excursion has occurred." The commenter then queried:

5) Would the water-quality indicators, or the monitoring wells, or both, be established after wellfield installation?

6) Why would the monitoring wells be established after wellfield installation since monitoring wells are part of wellfield installation?

7) What prevents the prior drilling, construction, and pressure testing of previously constructed injection and recovery wells from impacting the baseline water-quality indicators?

8) What other methods would be used to detect an excursion?

The commenter also referred to the statement in SEIS Section 2.1.1.2, "The monitoring of water levels that would be performed would serve to avert a potential excursion." Then the commenter opined that water-level measurements would be used to avert a potential excursion as opposed to detecting one that has already occurred.

Response: *1, 4, 5, 6) SEIS Sections 2.1.1.1 and 4.4.1.2 describe the requirements for the post-licensing, pre-operational installation of monitoring wells and water-quality data collection. The rationale for using post-licensing, pre-operational water-quality data to calculate UCLs for the detection of excursions is that the excursion monitoring program is part of the NRC-required ground-water detection monitoring program. The purpose of this detection monitoring program is to identify ground water impacted by uranium recovery if it is released to the environment outside the wellfields. To achieve this objective, a robust evaluation of the post-licensing, pre-operational data is required in order to set appropriate threshold or action levels (i.e., UCLs). In the event that the UCLs are exceeded, a licensee must initiate actions to minimize and/or correct any impacts due to an excursion.*

The robust evaluations require detailed site-specific characterization of the hydrogeology and geochemistry of a specific wellfield. Once a licensee identifies an area that meets its production criteria, the production area (wellfield) properties are characterized and documented in the wellfield data package. In addition to geochemistry, the wellfield data package also demonstrates that the monitoring wells around, above and below the wellfields are properly located and establish the point of compliance. The location of monitoring wells and the collection of water-quality data must be specific to each individual wellfield and the boundaries of a wellfield and the configuration of injection and recovery wells would only be determined by the Applicant after it receives its Source and Byproduct Materials License from NRC.

A significant number of monitoring wells and ground-water samples are required for calculation of the UCLs compared to the data required for the pre-licensing site characterization. The interested reader is directed to a compilation of the post-licensing, pre-operational data for three existing NRC-licensed ISR facilities at http://www.nrc.gov/info-finder/materials/uranium/licensed-facilities/crow-butte/isr-wellfield-ground-water-quality-data.html; http://www.nrc.gov/info-finder/materials/uranium/licensed-facilities/willow-creek/isr-wellfield-ground-water-quality-data.html; or http://www.nrc.gov/info-finder/materials/uranium/licensed-facilities/smith-ranch/isr-wellfield-ground-water-quality-data.html. Also see the response to Comment RP032-020 which discusses the process required by the NRC of the Applicant to establish post-licensing, pre-operational water quality; how these water-quality data would be used to establish UCLs; how the UCLs and ground-water monitoring would be used for the detection of excursions; and how the post-licensing process would be assessed in the NEPA review.

The water-quality indicators are proposed by the Applicant in its license application and approved by the NRC (Strata, 2011a; NRC, 2014b). Typical excursion indicators are chloride, specific conductance, and total alkalinity (NRC, 2009a). These parameters are generally appropriate as indicator parameters because they are more highly concentrated in lixiviants than in natural ground waters. As indicated by Draft License Condition No. 10.13, a hydrologic-test data package would be submitted by the Applicant for the NRC's approval. License Condition No. 10.13 would also require that the hydrologic-test data package document that all perimeter monitoring wells are screened in the appropriate geological stratum in order to provide timely detection of an excursion.

2) The concern expressed by the commenter that operational wellfields could potentially degrade the post-licensing, pre-operational water quality of subsequent downgradient monitoring wells targeting the same aquifers is addressed by the requirements contained in the Draft License. Excursions, if present outside a wellfield, would be corrected by the Applicant's pumping and recovering the impacted ground water. Therefore, impacted ground water would not generally migrate to adjacent wellfields or into an aquifer that has not been developed as a wellfield. In the unlikely event of an excursion impacting an adjacent wellfield that is currently being developed, the area of the aquifer that is impacted by the excursion would be avoided for the purposes of establishing the monitoring wells and collecting water-quality data for the UCLs.

3 and 7) There would be minimal potential for water quality in monitoring wells to be impacted by the Applicant's installation of injection and recovery wells or by its delineation wells. This is because no chemicals are used during the drilling of these wells that would impact the water quality, and the disturbance as a result of installation of drillholes, both operational and delineation, is localized.

8) In addition to regular sampling of the monitoring wells and the corresponding analysis of the samples for excursion indicators, water levels in the monitoring wells would be measured at each sampling event. (See also responses to Comment Nos. RP024-443, RP032-036, RP032-037, RP032-041, and RP032-042 for information related to ground-water and water-level monitoring.) An increasing water level in a perimeter monitoring well has been shown to be an indication of a local flow imbalance within a wellfield, which could result in an excursion. An increasing water level in an overlying or underlying monitor well could be caused by the migration of lixiviant from the ore zone or by failure of the casing in an injection well. Due to the confining pressure of the ore-zone aquifer, pressure propagates quickly through the aquifer and water levels would be affected in the monitoring wells days before impacts to water quality would be detected (Strata, 2011b). As discussed in response Comment No. RP032-030, the Applicant's measuring of the water levels in the monitoring wells would indicate hydrologic imbalances in the wellfields and could trigger corrective actions necessary to adjust the injection and recovery flow rates or a shutdown of individual injection wells before the excursion would be detected by water-quality monitoring. If a potential excursion were to be discerned by the Applicant's obtaining water-level measurements, this would allow the ground water impacted by lixiviant to be "recovered" (i.e., withdrawn and treated) before it reaches the perimeter monitoring wells; thus, this type of monitoring would serve as early detection of an excursion.

The NRC staff has revised the FSEIS by providing clarification of the requirements and the sequence of monitoring-well installation, post-licensing, pre-operational water quality collection, and development of excursion-indicator levels as well as adding information on Draft License Condition Nos. 10.13 and 11.3 to SEIS Sections 2.1.1.1, 2.1.1.2, 4.5.1.2, and 6.3.2. See also the NRC's response to 4) of Comment No. RP032-030 regarding a change made in FSEIS Section 2.1.1.2 to a related statement.

Comment: RP032-020

The commenter submitted a multiple-part comment requesting information and asking questions about the process required by the NRC of the Applicant to establish baseline water-quality characterization after the Source and Byproduct Materials License is issued; how the baseline water-quality data would be used to establish UCLs; how the UCLs and ground-water monitoring would be used for the detection of excursions; and how the post-licensing process

would be assessed in the NEPA review. The individual comments grouped under Comment No. RP032-020 are summarized below.

1) The commenter referenced the following sentence in DSEIS Section 2.1.1.1: "Later, prior to actual uranium-recovery wellfield operation, but after the initial Source and Byproduct Materials License is issued for wellfield construction, the ground water in each wellfield would be analyzed for the post-licensing, pre-operational baseline concentrations of constituents specified by the NRC (NRC, 2003a)." The commenter asked if the "post-licensing, pre-operational baseline concentrations of constituents" referenced in the sentence above are the same as the UCLs subsequently described in the SEIS and, if not, why and how they differ? In addition, the commenter asked when and how the NRC would employ these "post-licensing, pre-operational baseline concentrations" to measure and mitigate adverse impacts on ground water?

2) The commenter requested that the SEIS provide a map indicating the sequence, timing, and sampling locations for the pre-operational water-quality baseline samples for each wellfield proposed or planned for development in the Ross Project as well the potential development in the Lance District.

3) The commenter noted that the pre-licensing, site-characterization concentrations provided in the DSEIS as Table 3.7 were frequently given as a range rather than a single value. The commenter asked how the data in SEIS Table 3.7 would be used to establish UCLs and to support ground-water monitoring. In addition, the commenter asked how baseline monitoring would be used to control excursions and to establish TRVs for aquifer restoration, and how the NRC would evaluate and compare the environmental-protection effectiveness of prospective UCLs and "post-licensing, pre-operational baseline concentrations" that have not yet been established.

4) The commenter requested additional information on the NRC's rationale for its establishing UCLs after wellfield licensing and construction, rather than before.

5) The commenter noted that the use of TRVs in the Applicant's ER (i.e., Strata, 2011a) and, although this term did not appear to be used in the SEIS, the commenter asked how TRVs relate to the terminology used in the SEIS and how the concept of a TRV would be used in the Ross Project. In addition, the commenter asked if a comparative analysis was performed for the SEIS on alternative TRVs and how NRC's regulations and policies are incorporated into the analysis of reasonable alternatives.

6) The commenter requested clarification of the terms, "wellfield," "wellfield area," and "wellfield module" that are used in the SEIS. (See also NRC's response to Comment No. RP032-040, which defines and clarifies the term, "wellfield module.") In addition, the commenter asked how many wellfields were shown in Figure 2.4 of the SEIS, and if the shaded areas marked "Wellfield Perimeter Accounting for Future Drilling" in Figure 2.4 were used in the impact analyses of the Proposed Action and cumulative-impact analyses of the SEIS.

Response:

1) The phrase, "post-licensing, pre-operational baseline concentrations of constituents" in the statement referenced by the commenter includes the water-quality data used to calculate the UCLs subsequently described in Section 2.1.1 of the FSEIS and in Appendix B1. The NRC's

requirements and process employed to use the post-licensing, pre-operational concentrations to control impacts on ground water is described in the following paragraphs.

In accordance with the GEIS (NRC, 2009b), the Applicant's TR (Strata, 2011b), and Condition No. 11.3 in the Draft License for the Ross Project, monitoring wells would be required around the perimeter of each wellfield and in the overlying and underlying aquifers. As described in SEIS Sections 2.1.1.1 and 2.1.1.2, these monitoring wells would be sampled, and the results of the sample analyses (as concentrations of constituents specified by the NRC) would be used by the NRC to establish the post-licensing, pre-operational ground-water quality.

Indicator parameters were selected from the constituents for which analyses have been and would be performed. SEIS Sections 2.1.1.1 and 2.1.1.2 describe the process used by the NRC for development of UCLs for each indicator parameter. UCLs would be calculated from the post-licensing, pre-operational monitoring of the perimeter wells as well as the wells tapping the aquifers above and below the ore-zone aquifer. As indicated in Draft License Condition No. 11.4, the default parameters for wells in the OZ and the overlying aquifer are chloride, conductivity, and total alkalinity. The default excursion parameters for wells in the underlying aquifer are sulfate, conductivity, and total alkalinity. These parameters are not subject to geochemical retardation in aquifers and would be the first parameters whose concentrations would increase due to an excursion of lixiviant. UCL values are calculated as the mean concentrations of the appropriate set of wells plus five standard deviations to account for spatial variability.

Condition No. 11.5 of the Draft License discusses the requirements for the excursion-monitoring program in which samples would be regularly collected from the monitoring wells and analyzed for the indicator parameters. Measured concentrations in the monitoring wells that exceed the UCLs of the indictor parameters could indicate an excursion, which would then trigger additional monitoring, sampling, and analysis. The UCLs would be compared to monitoring data produced twice monthly. If the concentrations of any two excursion-indicator parameters were to exceed their respective UCL or any one excursion parameter was to exceed its UCL by 20 percent or greater, then the excursion criterion is exceeded and verification sampling would be done within 48 hours. Upon confirmation of an excursion, the Applicant would notify the NRC, implement corrective action, and increase monitoring frequency. The NRC staff has revised FSEIS Sections 2.1.1.1 and 4.5.1.2 by including text from Draft License Condition No. 11.5 as a result of this comment.

2) The sequence of activities that establish post-licensing, pre-operational water quality is described in paragraph 1) of this response. A map of the proposed monitoring wells would be submitted to the NRC as part of the hydrologic-test data package required in advance of operation, and therefore is not yet available. Information on pre-operational water quality within the potential satellite areas in the Lance District is also not available. The NRC staff's responses to Comment Nos. RP032-002, RP032-067, and RP041-009 describe the environmental-review process that the NRC would follow if the Applicant were to submit a license-amendment application to the NRC in order to expand its operation into any of the satellite areas.

3) The ground-water-quality data provided in DSEIS Table 3.7 were expressed as a range of values because many of the measurements were less than the respective laboratory's limits of detection, and values less than a detection limit are not amenable to calculating average values. However, additional data from Table 3.7 have been included in Table 3.6 in the FSEIS, which

has also been revised to include the minimum and maximum values as well as the average values where an average value is appropriate.

The pre-licensing, site-characterization concentrations provided in the SEIS are not used to develop UCLs or ground-water protection standards for the site-specific ground-water detection monitoring program that is required for each wellfield pursuant to 10 CFR Part 40 Appendix A, Criterion 7A. The pre-licensing, site-characterization concentrations provided in the SEIS are used to evaluate whether or not the setting is amenable to ISR operations including whether or not seasonal fluctuations could affect subsequent sampling or the characterization of the geochemistry (e.g., whether or not the typical excursion parameters used at ISR facilities would be suitable for this setting, and what are cleanup targets should a spill or release occur in the future).

Sampling to establish excursion UCLs and ground-water protection standards (TRVs) would be conducted as described in SEIS Sections 2.1.1.1, 2.1.1.3, and 4.5.1.2; and in response to Comment Nos. RP032-019, RP032-031 RP032-037; RP032-042. The UCLs and ground-water protection standards would be developed using strict statistical analysis for a site-specific ground-water detection monitoring program for each production area (i.e., wellfield or mine unit area) surrounded by a perimeter-well ring. In establishing these standards, the site-specific programs would also establish the point of compliance for which the standards apply. Please see responses to Comments RP024-013; RP024-161; RP024-169; RP024-170; RP024-425 for the wells assigned as the point of compliance.

The chemical analysis, well completion details, wellfield geometry, hydrogeologic evaluation and ground-water protection standards for operations (i.e., UCLs) and restoration would be included in a hydrologic-test data package completed prior to operations at a wellfield. Condition No. 10.13 of the Draft License would require that each hydrologic-test data package be submitted to the NRC before conducting principal activities in a new wellfield. The data package for the first wellfield would require verification by NRC staff to ensure the Applicant provides an analysis consistent with its commitments in the license application, license conditions and regulations. .

The NRC staff would utilize the Applicant's wellfield data package in the evaluation to determine whether the Applicant's restoration of a wellfield after the uranium recovery operations are complete and meet the ground-water protection standards; and thus are protective of human health and the environment as an unrestricted use area. As noted in the SEIS, in responses to other comments in this Appendix, and in Appendix B1, the ground-water protection standards permit the use of an ACL established by the Commission. In the case of an ACL, the Applicant (then a "Licensee") would be required to submit a license-amendment request to the NRC to approve and thus establish ACLs for those constituents that do not meet the standards in 10 CFR Part 40, Appendix A, Criteria 5B(5)(a) and (b).

A license-amendment request for an ACL would be evaluated by the NRC staff based upon the standards in 10 CFR Part 40, Appendix A, Criterion 5B(6). In accordance with 10 CFR Part 40, Appendix A, Criterion 5B(6), the NRC staff would only consider requests for an ACL(s) after a licensee has demonstrated that restoring the constituent at issue to post-licensing, pre-operational or maximum contaminant levels (MCLs) (i.e., maximum contaminant concentrations) is not practical for a specific site. To determine whether a licensee has undertaken "reasonable restoration efforts," the NRC staff would consider the aquifer-restoration methods applied and their effectiveness in achieving aquifer-restoration goals at a specific site. If the NRC concludes reasonable efforts were not applied, the licensee would be required to continue restoration

efforts until reasonable efforts have been demonstrated before a request for an ACL could be submitted.

The NRC staff has revised FSEIS Sections 2.1.1.1, 2.1.1.2, 2.1.1.3, 4.5.1.2, and 4.5.1.3, to provide greater clarification on the application of 10 CFR Part 40, Appendix A, Criterion 5B(5). In addition, the NRC has attached Appendix B1, which discusses the requirements for ACLs established by 10 CFR Part 40, Appendix A, Criterion 5B(5), to this Appendix B. Finally, ACL application-review procedures for the NRC staff are described in the NRC's "Staff Technical Position, Alternative Limits for Title II Uranium Mills (NRC, 1996b) and NUREG–1724 (NRC, 2000).

4) The responses to the previous portions of this Comment No. RP032-020 provide information on the process and the logical sequence of activities related to ground-water protection. The commenter's request to provide additional information on the rationale for previously established NRC policies is beyond the scope of this Ross Project SEIS.

5) "TRV" is an industry term for ground-water protection standards that is not used by the NRC. Rather, ground-water protection standards for each wellfield are established per 10 CFR Part 40, Appendix A, Criterion 5B(5)(a) as described in the response to 4).

The NRC staff did not conduct a comparative analysis of alternative ways of meeting the ground-water protection standards allowed under 10 CFR Part 40, Appendix A, Criterion 5B(5), which establishes the ground-water protection standards required for aquifer restoration and allows three options for meeting these standards. Under Criterion 5B(5), the concentration of a hazardous constituent must not exceed one of three standards: a) the Commission-approved background [in this SEIS, "post-licensing, pre-operational"] concentration of that constituent in the ground water; b) the respective value given in the table in paragraph 5C of Criterion 5B(5) if the constituent is listed in the table and if the background [in this SEIS, "post-licensing, pre-operational"] level of the constituent is below the value listed; or c) an ACL established by the Commission. Consideration of the technical feasibility and environmental benefits and costs of the optional ground-water protection standards of Criterion 5B(5) would be given at the time the NRC reviews a RAP submitted by a licensee. As reported in the NRC staff's response above to this Comment No. RP032-020, 4), the NRC has revised the FSEIS by attaching Appendix B1 to this Appendix B and by integrating additional information into FSEIS Sections 2.1.1.3 and 4.5.1.3 where the NRC's process for applying 10 CFR Part 40, Appendix A, Criteria 5B(5) is discussed.

6) The terms "wellfield" and "wellfield area" are synonymous. As described in FSEIS Section 2.1.1, a "wellfield module" is a group of wells within a wellfield connected with piping to a central collection facility called a "module building" or a "header house." A wellfield would contain multiple modules. This comment identified an error in the DSEIS that has been corrected. In the Executive Summary and in Section 2.1.1.1, where this phase, "The Ross Project would host 15 – 25 wellfield areas" occurs, the text has been corrected to read, "Ross Project would host 15 – 25 wellfield modules." (See NRC's response to Comment No. RP032-040 as well for a discussion of wellfield modules and accounting units.)

Comments: RP032-036; RP032-041

The commenter asked to be directed to the location in the SEIS that demonstrates the following or that an analysis be provided in the FSEIS that demonstrates the following:

1) The post-licensing, pre-operational constituent concentrations in ground water will fairly represent the baseline water quality of the target aquifer before wellfield development activities commence under the proposed Ross Project and the potential Lance District satellites;

2) Aquifer restoration would restore the small segment of the mined aquifer within each wellfield to the NRC's post-licensing, pre-operational determination of baseline conditions, much less any scientifically credible representation of pre-ISR water quality;

3) The NRC's license required standards for aquifer restoration;

4) The integrated summation of the hundreds of individually variable wellfield target restoration values would actually restore the overall pre-mining water quality over the entire extent of the aquifer that has been mined and adversely affected by mining;

5) There is reason to conclude from the record of previous NRC-regulated mining operations that the target restoration values, established post-licensing as wellfield expansion proceeds, will be achieved in practice prior to wellfield abandonment, and will ensure that the NRC protects public health and safety;

6) That Maximum Concentration Limits or ACLs will ensure adequate protection of the public health and safety and avoid, minimize, or mitigate other adverse environmental impacts.

Response: *ISR facilities operate by first extracting uranium from specific areas called wellfields. After uranium recovery has ended, the ground water in the wellfield contains constituents that were mobilized by the lixiviant. Licensees shall commence aquifer restoration in each wellfield soon after the uranium recovery operations end (NRC, 2009b). Aquifer restoration criteria for the site-specific constituents are determined either for each individual well or as a wellfield average.*

NRC licensees are required to return water-quality parameters to the standards in 10 CFR Part 40, Appendix A, Criterion 5B(5). As stated in the regulations: "5B(5)—At the point of compliance, the concentration of a hazardous constituent must not exceed—(a) The Commission approved background [in this SEIS, "post-licensing, pre-operational"] concentration of that constituent in the ground water; (b) The respective value given in the table in paragraph 5C if the constituent is listed in the table and if the background [in this SEIS, "post-licensing, pre-operational"] level of the constituent is below the value listed; or (c) An alternative concentration limit established by the Commission." It is outside the scope of this SEIS to evaluate the NRC's regulations regarding aquifer restoration and to provide an analysis to demonstrate that the regulations are sound.

1) The post-licensing, pre-operational constituent concentrations discussed in this SEIS are equivalent to the Commission-approved "background concentrations of hazardous constituents" in ground water defined by 10 CFR Part 40, Appendix A, Criterion 5B(5). Condition No. 11.3 of the Draft Source and Byproduct Materials License would require the establishment of post-licensing, pre-operational ground-water quality (NRC, 2014b):

> 11.3 Establishment of Background Water Quality. Prior to injection of lixiviant in a wellfield, the licensee shall establish background [in this SEIS, "post-licensing, pre-operational"] groundwater quality data for the ore zone, overlying and underlying

aquifers. The background [in this SEIS, "post-licensing, pre-operational"] water quality sampling shall provide representative baseline [in this SEIS, "post-licensing, pre-operational"] data and establish groundwater protection standards and excursion monitoring upper control limits, as described in Section 5.7.8 of the approved license application and this license condition.

The data for each mine unit shall consist, at a minimum, of the following sampling analyses:

A) Ore Zone. To establish a Commission-approved background [in this SEIS, "post-licensing, pre-operational"] concentration pursuant to Criterion 5B(5)(a) of 10 CFR Part 40 Appendix A, samples shall be collected from production and injection wells at a minimum density of one production or injection well per two acres of wellfield production area, or, if a wellfield production area is sufficiently isolated from the other wellfield production areas in the Wellfield, a minimum of two wells. Wells selected for the baseline [in this SEIS, "post-licensing, pre-operational"] data will be the same ones used to measure restoration success and stabilization.

B) Perimeter Monitoring Wells. Samples shall be collected from all perimeter monitoring wells that will be used for the excursion monitoring program. The perimeter wells will be installed for a wellfield in accordance with information presented in Section 3.1.6 of the approved license application. In no case will the perimeter monitoring wells be installed outside of the exempted aquifer as defined by the Class III UIC permit issued by the WDEQ.

C) Overlying and Underlying Aquifers. Samples shall be collected from all monitoring wells in the first overlying and first underlying aquifer at a minimum density of one well per 4 acres of wellfield.

D) Sampling and Analyses. Four samples shall be collected from each well to establish background [in this SEIS, "post-licensing, pre-operational"] levels. The sampling events shall be at least 14 days apart. The samples shall be analyzed for parameters listed in Table 5.7-2 of the approved license application. The third and fourth sample events can be analyzed for a reduced list of parameters; the parameters that can be deleted from analysis are those below the minimum analytical detection limits (MDL) during the first and second sampling evens provided the MDLs meet the data quality objectives for the sampling.

E) Background Water Quality. For the perimeter ring monitoring wells (Section B) and monitoring wells in the overlying and underlying aquifers (Section C), the background [in this SEIS, "post-licensing, pre-operational"] levels shall be the mean values on a parameter-by-parameter, well-by-well, wellfield or sub-set of the wellfield basis, as deemed appropriate, in accordance with Section 5.7.8.1 of the approved license application. The UCLs for monitoring wells in the perimeter ring and overlying and underlying aquifers are established be License Condition [No.] 11.4. For the ore zone monitoring wells, the background [in this SEIS, "post-licensing, pre-operational"] levels shall be established on a parameter-by-parameter basis using either the wellfield, sub-set of the wellfield or well-specific mean value. The established background [in this SEIS, "post-licensing, pre-operational"] value for each parameter shall be based upon the mean value plus a statistically valid factor to account for spatial variability in the data, in accordance with Section 6.1.1.1 of the approved license application.

2) through 6) Condition No. 10.6 of the Draft License addresses the NRC's required standards for ground-water restoration.

> 10.6 Groundwater Restoration. The licensee shall conduct groundwater restoration activities in accordance with Section 6.1.5 of the approved license application. Permanent cessation of lixiviant injection in a production area would signify the licensee's intent to shift from the principal activity of uranium recovery to the initiation of groundwater restoration and decommissioning for any particular production area. If the licensee determines that these activities are expected to exceed 24 months for any particular production area, then the licensee shall submit an alternate schedule request that meets the requirements of 10 CFR 40.42.
>
> Restoration Standards. Hazardous constituents in the groundwater shall be restored to the numerical groundwater protection standards as required by 10 CFR Part 40, Appendix A, Criterion 5B(5). In submitting any license amendment application requesting review and approval of proposed alternate concentration limits (ACLs) pursuant to Criterion 5B(6), the licensee must also show that it has first made practicable effort to restore the specified hazardous constituents to the background [in this SEIS, "post-licensing, pre-operational"] or maximum contaminant levels (whichever is greater).
>
> Restoration Stability Monitoring. The licensee shall conduct sampling of the parameters included in the baseline [in this SEIS, "post-licensing, pre-operational"] sampling under LC 11.3 during the restoration stability period in accordance with Section 6.1.2.5 of the approved application. The sampling consists of eight samples during a 12 month period. The sampling shall include the specified production zone aquifer wells used to define the baseline [in this SEIS, "post-licensing, pre-operational"] levels. The Applicant shall continue the stability monitoring until the data show, for all parameters monitored, no statistically significant increasing trend, which would lead to an exceedance of the relevant standard in 10 CFR Part 40, Appendix A, Criterion 5B(5).

Further guidance for the NRC's evaluation of ACLs for uranium-recovery facilities is currently being developed for a revision of NUREG–1569 (NRC, 2003a). Existing guidance for the NRC's review of ACLs for conventional mills can be found in NUREG–1620, Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of UMTRCA (NRC, 2003c). *Further explanation of the ground-water protection standards found at 10 CFR Part 40, Appendix A, Criterion 5B(5) were added to FSEIS Sections 2.1.1.1 and 4.5.1.3. (See also the NRC staff's response to Comment No. RP032-020 for additional information on ground-water protection standards.) In addition, Appendix B1 has been attached to this Appendix to provide further information on ACLs.*

Comment: RP032-066

The commenter referenced the following statement in SEIS Section 2.4, "Regarding ground water, the portion of the aquifer(s) designated for uranium recovery must be exempted as underground sources of drinking water before ISR operations begin." The commenter then asked several questions:

1) Why is this exemption necessary if, as claimed in the same paragraph, "Strata would also be required to restore ground-water parameters affected by the ISR operations to levels that are protective of human health and safety?" In other words, if Strata must restore ground-water parameters affected by ISR operations to levels that are "protective of human health and

safety," why is it necessary to exempt the aquifer in the future from serving as a potential source of drinking water?

2) What are the levels for key constituents of the "restored" mined-out aquifer that the NRC deems "protective of human health and safety?" If these levels are truly protective of human health and safety, why can't the restored aquifer serve as a source of drinking water? If it can't serve this function, is it reasonable or legitimate to say that the aquifer has been "restored" to a level that is "protective of human health and safety," including future uses that humans depend on, such as watering livestock and crop irrigation?

3) The only way to decipher and make sense of this apparent contradiction, which arises from purposefully vague writing, is to interpret the phrase "restore ground-water parameters affected by ISR operations" as excluding the mined aquifer itself. Then the problematic phrase reduces to, "Strata will protect human health and safety as it relates to current and future uses of aquifers beyond the ore zone." The commenter asked NRC to clarify what the referenced statement in Section 2.4 is intended to convey.

Response: *The statement subject to the commenter's questions is found in DSEIS Section 2.4, Preliminary Recommendation, which summarized with a bulleted and numbered list the key points of the impact analysis described throughout DSEIS Section 4. Please see the NRC's responses to Comment Nos. RP024-013; RP024-161; RP024-169; RP024-170 for a discussion of the applicability of 10 CFR Part 40, Appendix A, Criterion 5B(5) to ground-water restoration and wellfield decommissioning.*

As discussed in Section 2.1.1.1 of the FSEIS, by EPA regulations, an exemption from protection as an Underground Source of Drinking Water (USDW) in the SDWA is required prior to any injection for uranium recovery activities (see 40 CFR Part 146). The applicable criteria to permit the ore zone to be an exempted aquifer is a demonstration that it cannot now and will not in the future serve as a source of drinking water because of the mineralization. EPA's requirement for an exempted aquifer for ISR operations is monitoring to ensure no fluid migration to the surrounding USDW's.

The WDEQ UIC program and its regulations are slightly more stringent than EPA's. Wyoming requires operators to return the ore-zone water quality to the pre-mining class of use, which is generally livestock water supply or industrial uses.

The water-quality levels for key constituents in the aquifer of the restored wellfields would be established by the ground-water protection standard as specified in 10 CFR Part 40, Appendix A, Criterion 5B(5). To ensure protection of the ground water outside the exempted aquifer, the NRC requires that once uranium recovery is complete, ground-water quality at the point of compliance must not exceed the ground-water protection standard as specified in 10 CFR Part 40, Appendix A, Criterion 5B(5) which would ensure protective of human health and safety beyond the exempted aquifer. Historically, the NRC staff has assigned the point of compliance at the boundaries of the EPA-defined exempted aquifer. During operation, the point of compliance wells are those monitoring wells in the excursion-monitoring program; during site reclamation and restoration, until complete closure, the compliance wells are principally the wellfields' post-licensing, pre-operational monitoring wells located within the wellfields, although monitoring for compliance continues at the wells in the excursion-monitoring program. A detailed explanation of the constituents and their protective levels established by Appendix A,

Criterion 5B(5) is included in the response to Comment Nos. RP024-013, RP024-161, RP024-169, and RP024-170.

Additional text explaining the ground-water protection standards and how they are implemented has been added to FSEIS Sections 2.1.1.1, 2.1.1.3, 4.5.1.2, 4.5.1.3, and 5.4.1.3. Appendix B-1 was also added to this FSEIS. This Appendix describes how ACLs are developed per the ground-water protection standards and how these standards ensure public health and safety.

DSEIS Section 2.4 provided the NRC staff's preliminary recommendation regarding the Proposed Action, based on the findings in the DSEIS, and provided a detailed summary of the DSEIS findings. However, it should be noted that, Section 2.4 of the FSEIS provides the NRC staff's final recommendation regarding the Proposed Action but does not include the detailed summary of the SEIS findings, which were the subject of this comment.

B.5.15.2.4 Impact Analysis for Ground-Water Use

Comment: RP024-216

The commenter requested clarification on the ground-water impacts of a "permanent mine pit," given that the WDEQ would not allow an open-pit mined area to remain following site reclamation and restoration.

***Response**: Although not an accepted practice, WDEQ Rules and Regulations at Chapter 3, "Noncoal Environmental Protection Performance Standards" do not specifically express a prohibition of an operator's leaving mine pits at a closed site (WDEQ/LQD, 2006). Nevertheless, the NRC staff has revised the text in FSEIS Section 2.2.1 to indicate that there would be the potential for impacts from mine pits remaining from conventional mining, if such open pits were allowed.*

Comment: RP040-008

The commenter expressed concerns about the consumptive use of ground water and requested that climate change be included in the impact analysis for ground-water use.

***Response:** The NRC staff did not explicitly include climate change in the consumptive-use analysis because the impacts of climate change on recharge to the aquifer are not known. Reduced precipitation that could result from climate change would not necessarily result in less recharge to the aquifer. Water levels currently measured in the Lance and Fox Hills aquifers do not exhibit seasonal variation or sensitivity to frequency and intensity changes to precipitation events. The Applicant's ground-water model determined that infiltration from the land surface to the aquifer is only approximately 0.2 – 0.56 cm/yr [0.07 – 0.22 in/yr]. Most of that precipitation is lost to runoff, evaporation, and transpiration. The amount of precipitation available for recharge to the aquifer is primarily controlled by soil type and runoff conditions, and it could be little affected by the variation in the amount of precipitation*.

In response to Comment No. RP035-006, the NRC staff has added quantitative information on the estimated rates of consumptive use of ground water to FSEIS Section 4.5.1. During the period where uranium-recovery operation would be concurrent with aquifer restoration (i.e., during most of the Ross Project), consumptive use of ground water would be approximately 859 L/min [227 gal/min], or approximately 3 percent of the ground water withdrawn from the

Project's recovery wells. During the final two years of the Ross Project, during the period when aquifer restoration would occur without wellfield operation, consumptive use of ground water would be approximately 720 L/min [190 gal/min]. No changes were made to this SEIS beyond the information provided in this response.

B.5.15.3 Miscellaneous Ground Water Comments

Comment: RP024-030

The commenter noted the statement in the DSEIS's Executive Summary, "With respect to the deep aquifers where injection of liquid byproduct wastes would occur, regular monitoring of the water quality of the injected brine is required by the permit; thus, the potential impacts of the Ross Project's operation to ground-water quantity and quality in the deep aquifers would be SMALL." The commenter suggested that the NRC staff modify this statement to indicate that potential impacts to deep aquifers would be limited by the water quality in exempted aquifers and the limited zone of influence, in addition to the monitoring requirements.

Response: *The NRC staff has revised the text in the Executive Summary in the FSEIS to address the commenter's suggestion as follows: "With respect to the deep aquifers into which injection of liquid byproduct materials would occur, the WDEQ/WQD determined by way of its issuance of the UIC Class I Permit to Strata that, at the depths and locations of the injection zones specified in the UIC Permit, the use of ground water from the Flathead and Deadwood Formations is economically and technologically impractical (WDEQ/WQD, 2011b). In addition, Strata projected from regional water quality data from that the TDS in the Deadwood/Flathead Formations will likely be greater than 10,000 mg/L and therefore would not be suitable as a USDW (Strata, 2011b). Monitoring of lixiviant-injection pressures and water quality of the injected brine are required by the UIC Class I Permit; thus, the potential impacts of the Ross Project's operation to ground-water quantity and quality in the deep aquifers would be SMALL."*

Comment: RP024-417

The commenter requested clarification on the DSEIS's statement in Section 4.5.1.1 that "the analysis of impacts to ground water provided in the GEIS are applicable because the effects of the containment barrier wall (CBW) on shallow ground water are localized and the presence of the CBW would not affect the surrounding ground water." The commenter noted that this statement was inconsistent with the subsequent text in that section, which stated that "Construction of the CBW could impact the quantity of water in the shallow aquifer because the CBW would isolate the shallow aquifer at the Ross Project facility."

Response: *The commenter identified an apparent contradiction within DSEIS Section 4.5.1.1. The first statement referenced by the commenter has been revised in FSEIS Section 4.5.1.1 to read, "Although construction of the CBW during the Proposed Action is not part of the typical ISR design considered in the GEIS, the analysis of impacts to ground water provided in the GEIS are applicable because the effects of the CBW on shallow ground water are localized." The impacts referred to in the second statement are localized within the shallow aquifer.*

Comment: RP024-435

The commenter suggested that a statement be added to the SEIS in Section 4.5.1.2 that describes the reason that the deep-monitoring (DM) aquifer was not included in the Applicant's

ground-water hydrologic model. The commenter stated that, as indicated in the Applicant's TR, Addendum 2.7-H, "the intervening shale between the two aquifers effectively isolates them from each other which means that any attempt to model the DM [deep-monitoring aquifer] would show negligible response to changes in the overlying OZ [ore-zone] aquifer."

Response: *The NRC staff acknowledges that the TR, Addendum 2.7-H, of Strata's license application described the Applicant's basis for its model (Strata, 2011b). However, the NRC staff does not agree that the suggested addition is necessary here, where the SEIS states that the Applicant used the top of the lower confining unit as the lower boundary in the model. No changes to the SEIS were made in response to this comment.*

Comment: RP024-437

The commenter noted that the statement, "The Applicant would continue geologic evaluation and hydrologic testing to characterize the integrity of the lower confining units, through observations of piezometric levels in the SM [shallow-monitoring] and DM [deep-monitoring] aquifers," does not indicate that the upper confining unit would also continue to be evaluated.

Response: *The NRC staff has revised the text in FSEIS Section 4.5.1.2 to indicate that the upper confining unit would also continue to be evaluated.*

Comment: RP024-464

The commenter referenced the statement in SEIS Section 4.5.1.4, "The Applicant's implementation of BMPs and SOPs for the plugging and abandonment of its own wells during decommissioning of the Proposed Action would reduce the likelihood of shallow-aquifer contamination." The commenter suggested modifying the statement as follows: "The Applicant's implementation of BMPs and SOPs for the plugging and abandonment of its own wells during decommissioning of the Proposed Action and historical holes during wellfield development would reduce the likelihood of shallow-aquifer contamination."

Response: *The NRC does not agree that the suggested modification is necessary. Since SEIS Section 4.5.1.4 discusses decommissioning, only activities that would occur during decommissioning are included in that Subsection. Information regarding the well plugging that would occur during construction is included in SEIS Section 4.5.1.1. No changes were made to the SEIS beyond the information provided in this response*.

Comment: RP024-649

The commenter requested that the NRC staff more clearly support the use of the 0 m [0 ft] elevation contour on the top of the Fox Hills Formation for the ground-water cumulative-impacts study area in DSEIS Section 5.7.2.

Response: *As noted in SEIS Section 5.7.2, the depths of the City of Gillette's wells that draw water from the Fox Hills Formation were used by the NRC staff to define the western edge of the ground-water study area used for the assessment of cumulative impacts. The Fox Hills aquifer is approximately 1,200 – 1,500 m [4,000 – 5,000 ft] deep and has an elevation of 0 m [0 ft] at the locations of the City of Gillette's wells. Information on the depth of the Fox Hills aquifer included in this response has been added to the FSEIS Section 5.7.2 to support the selection of the western edge of the cumulative-impacts study area.*

Comment: RP032-058

The commenter referenced the following statement from DSEIS Section 2.1.1.1: "The Applicant expects the production of ground water during operations and decommissioning of wells completed outside of the aquifer exempted for uranium recovery (Strata, 2011a). This ground water would be discharged under a temporary WYPDES Permit." The commenter asked: 1) How many wells, of what type, into which formations, are covered now under the terms of this "temporary permit?" 2) How many wells will be drilled and covered by this permit in the future; 3) How long is the term of the renewed permit? 4) Where and how is the ground water "discharged" under the terms of this permit?

Response: *The WYPDES Permit is a temporary permit that requires renewal each year, and every WYPDES Permit that the Applicant is issued expires December 31 of the year the permit is issued (WDEQ/WQD, 2011a). The Permit applies only to ground water from wells that have not been put into operation of a wellfield and have not received lixiviant. The Permit authorizes the discharge of waste water associated with well development and testing activities from the Ross Project, but it does not specify the number of wells nor the depths or locations from which ground water can be discharged. However, as described in SEIS Section 2.1.1, the Proposed Action would consist of 1,400 – 2,200 recovery and injection wells plus monitoring wells. The wells would primarily be completed in the ore zones of the Lower Lance and Upper Fox Hills aquifers, but some monitoring wells would be completed in the aquifers underlying and overlying the ore-zone aquifers. The location of discharge is restricted to six unnamed, ephemeral tributaries to the Little Missouri River within the Ross Project area's boundaries (WDEQ/WQD, 2011a). The Permit requires that discharges are performed in a manner so as to prevent erosion, scouring, or damage to stream banks, stream beds, or other "Waters of the State" at the point of discharge. In addition, the Permit requires that there shall be no deposition of substances in quantities that could result in significant aesthetic degradation or in degradation of habitat for aquatic life, plant life, or wildlife, or which could adversely affect public-water supplies or those intended for agricultural or industrial use. The NRC has included additional information in the description of the Project's liquid effluents in FSEIS Section 2.1.1.5 to provide the supplemental detail on the Applicant's temporary WPDES Permit, as requested by the commenter.*

Comment: RP032-065

The commenter referenced the DSEIS Section 2.4 statement, "During operations there would be a MODERATE impact to ore-zone aquifer's water quality due to excursions; however, with measures in place to detect and resolve the excursions, the impacts would be reduced. During aquifer restoration there would be a MODERATE impact to ore-zone-aquifer water quantity due to short-term drawdown (see SEIS Sections 4.5.1.2 and 4.5.1.3)." The commenter requested additional information on the following topics:

1) Regarding the DSEIS statement, "...however, with measures in place to detect and resolve excursions, the impacts would be reduced," the commenter asked the NRC to please quantify the meaning of "reduced" in this context—from MODERATE to what? The commenter asked if the statement means that the impacts on the ore-zone aquifer would be no longer be "MODERATE," and, thus, they would be "SMALL." The commenter also asked what "SMALL" means quantitatively in this context, expressed as a deviation from pre-licensing site-characterized levels.

2) Regarding the following statement in DSEIS Section 2.4: "During aquifer restoration there would be a MODERATE impact to ore-zone-aquifer water quantity to short-term drawdown...." the commenter asked that the possible range of time that the NRC associates with "short-term" drawdown of an aquifer be discussed, and why this length of time would impose only a "MODERATE" environmental impact on current and potential future users of the aquifer be explained. The commenter asked if a "restored" aquifer's failure to recharge fully after thirty years would be a "MODERATE" impact.

3) The commenter asserted that the NRC's conclusions in DSEIS Section 2.4 indicate nothing about water-quality impacts during and after restoration. Therefore, the commenter asked if there are no water-quality impacts arising from and/or enduring past the aquifer-restoration phase of the Ross Project.

4) The commenter stated that since it is well known that there *are* such lasting impacts, when expressed as prolonged deviations from pre-operational baseline levels for key constituents whose concentrations determine the relative human potability and other uses of ground water, the commenter asked that the NRC staff describe the deviations from baseline water-quality values expected at the Ross Project and potential satellite areas in the Lance District.

Response: *The statement referenced by the commenter is presented in Section 2.4 "Preliminary Recommendation" in the DSEIS. DSEIS Section 2.4 provided the NRC staff's preliminary recommendation regarding the Proposed Action, based on the findings in the DSEIS, and provided a detailed summary of the DSEIS findings. However, it should be noted that Section 2.4 of the FSEIS provides the NRC staff's final recommendation regarding the Proposed Action but does not include the detailed summary of the SEIS findings, which were the subject of this comment.*

1) As noted in DSEIS Section 2.4, the NRC staff's impact analyses to support the summary statement in DSEIS Section 2.4 were found in DSEIS Sections 4.5.1.2 and 4.5.1.3. As stated in DSEIS Section 4.5.1.2, "The short-term potential impacts of lixiviant excursions from uranium-recovery operation to the OZ aquifer outside the exempted area would be SMALL to MODERATE. Detection of excursions through the network of monitoring wells, followed by the Applicant's pumping of ground water to recover the excursion would reduce the long-term potential impacts to the OZ aquifer outside the exempted portion to SMALL." Therefore, the reduction of impacts of lixiviant excursions to the OZ aquifer outside of the exempted area discussed in DSEIS Section 2.4 is a reduction from MODERATE short-term impacts to SMALL long-term impacts. As explained in SEIS Section 4.1, SMALL is a standard used in this SEIS to describe environmental effects that are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource considered. Before aquifer restoration would be approved by the NRC, the Applicant would be required to correct ("recover") all excursions and meet ground-water protection standards within the wellfields.

2) The analysis to support the NRC staff's determination that during aquifer restoration there would be a MODERATE impact to ore-zone aquifer water quantity due to short-term drawdown is described in SEIS Sections 4.5.1.2 and 4.5.1.3. Short-term impacts are those that occur during operations and restoration, which is expected to be about six years. The hydrologic model of the ore-zone aquifer during the operation and aquifer-restoration phases predicted significant drawdowns in three wells within the Ross Project area. Minor drawdowns were predicted in wells outside the Project area but within approximately 3 km [2 mi] of the Project. (The hydrologic model was presented in Addendum 2.7-H of the Applicant's TR [Strata, 2011b].)

FSEIS Section 4.5.1.2 reports the quantitative results of the drawdown predicted by the hydrologic model and explains that the most significant drawdown at the completion of restoration predicted by the model occurs in the well that supplies water to a structure that is currently used by the Applicant as its Field Office for the Ross Project and provides water to livestock. SEIS Section 4.5.1.2 further describes that a major variable in the predicted drawdown is the use of the Merit oil-field water-supply wells. To minimize the drawdown of the ore-zone aquifer, as indicated by Draft Source and Byproduct Materials License Condition No. 10.19, wellfields would not be allowed south of the Little Missouri River until Merit's use of the oil-field water-supply wells have ceased or diminished to an acceptable level (NRC, 2014b). Because the significant drawdown is predicted to be within the Ross Project area, Draft License Condition No. 10.19 would minimize the drawdown. This information was added to FSEIS Section 4.5.1.2. The time required for the aquifer to fully recharge is not necessarily the determining factor in assessing the impacts. The availability of water for the public is a key factor in impact assessment. The NRC staff determined that the potential impacts of the Proposed Action's aquifer-restoration phase to ground-water quantity of the confined aquifers would be SMALL to MODERATE because the minor drawdown during operations and restoration in wells outside of the Project area would not affect the water available for public use, and because reversal of the drawdown would begin as soon as restoration is completed.

3) The commenter is correct that the NRC staff's summary in DSEIS Section 2.4 did not specifically address water-quality impacts during aquifer restoration. DSEIS Section 2.4 stated "Potential adverse impacts to all environmental resource areas are expected to be SMALL, with the exception of… ." DSEIS Section 2.4 went on to provide a detailed summary of impacts that were expected to be greater than SMALL (i.e. MODERATE and LARGE impacts). As described in SEIS Sections 4.5.1.3 and 4.5.1.4, the water-quality impacts during and after aquifer restoration would be SMALL. Therefore, a detailed summary of the water-quality impacts during and after aquifer restoration was not provided in DSEIS Section 2.4.

4) The commenter asked that the NRC staff describe the deviations from baseline water-quality values expected at the Ross Project and potential satellite areas in the Lance District. As described in the response to Comment No. RP032-004, compliance with the regulations found in 10 CFR 40 Appendix A Criterion 5(B) would ensure that there are no deviations from Commission-approved post-licensing, pre-operational levels (baseline water quality) outside the exempted aquifer. Within the exempted aquifer, when restoration is complete, the water quality may deviate from the Commission-approved post-licensing, pre-operational levels but must meet water-quality numerical values given in Criterion 5(B)6 or an ACL for a given constituent. In response to Comment No. RP032-004, FSEIS Sections 2.1.1.2 and 4.5.1.2 have been revised to clarify these requirements and the associated process used by the NRC to determine ground-water-restoration compliance.

Comment: RP032-072

The commenter referenced the following statement in DSEIS Section 3.5.3: "Domestic wells are generally deeper than stock wells, ranging from 46 to 180 m [150 to 600 ft]. The limited information available on these wells has precluded a determination of which aquifer was supplying water to the domestic wells." The commenter stated that the DSEIS's inability to determine the aquifer tapped by the domestic wells seemed a little too convenient and thought that the domestic wells could easily include the Lance and Fox Hills Formations. The commenter asked for more information on the supply aquifers and water quality found in these domestic wells.

Response: *The depths of the water-supply wells within the 3-km [2-mi] buffer zone are found in the well-completion records at the Wyoming State Engineers Office (WSEO). No information on the stratigraphic unit or the aquifer tapped by these wells is included in the records on file at the WSEO. The question of whether the domestic wells tap water from the same aquifer as that proposed for uranium recovery is answered by a review of the depths of the wells compared to the depths of the proposed wellfields. As indicated in SEIS Section 2.1.1, the top of the ore zone is approximately 76 m [250 ft] deep at the eastern edge of the Project area and 200 m [650 ft] deep at the Project's western edge. The increasing depth to the ore zone from east to west across the Project area is due to the stratigraphic dip into the Powder River Basin (see SEIS Section 3.4, Geology and Soils for additional information on the geology of the Project area). The thickness of the ore zone ranges from 30 m to 55 m [100 to 180 ft].*

Based upon the depths of the water-supply wells, none of the domestic wells west of the Ross Project area (i.e., the downgradient flow direction) and its north-south projection are deep enough to intersect the unit in which the ore-zone aquifer is present, which is projected to be greater than 200 m [650 ft] deep on the western edge of the Project area. In other words, the domestic wells west of the Project area appear to tap ground water that is above the ore zone. East of the proposed Project area and its north-south projection (the upgradient flow direction), the wells that are identified as domestic are in the steeply dipping monocline section of the unit within which the ore-zone aquifer is located. The stratigraphic unit at the bottom of the wells cannot be estimated from the information that is available. North and south of the Ross Project area, there are no domestic wells sufficiently deep to intersect the top of the ore-zone aquifer. As described in SEIS Section 6.2.5, the Source and Byproduct Materials License would require that nearby water-supply wells within 2 km [approximately 1 mi] of an active uranium-recovery wellfield be monitored throughout the lifecycle of the Project. The locations of these water-supply wells (i.e., the 29 wells within 2 km [1 mi] that were monitored by the Applicant during its pre-licensing, site-characterization efforts) are shown in Figure 3.16 which has been added to this FSEIS. These wells will continue to be monitored during the lifecycle of the Project. The water quality of the water-supply wells is described in FSEIS Section 3.5.3. Appendix C, which contains all of the water-quality data submitted by the Applicant, has also been added to this FSEIS.

Comment: RP035-005

The commenter noted that the DSEIS stated in Section 4.5.1.2 the following: "Impacts from consumptive use of ground water from the ore zone would be minimized by cessation of water withdrawals by the Merit oil-field water-supply wells. The ground-water model simulated a single operational sequence of wellfield development, recovery, and aquifer restoration. Different operational approaches could be more effective in reducing impacts, and the Applicant proposes to investigate these as wellfield installation and testing progresses." The commenter stressed the importance of evaluating the range of impacts of consumptive ground-water use in the FSEIS. The commenter also recommended that the Record of Decision (ROD) include a requirement that "prior to operation, modeling that utilizes multiple operational wellfields is completed" as well as "a commitment to identifying and implementing mitigation measures that prevent excursions from concurrent operation of multiple wellfields."

Response: *The Applicant's ground-water hydrologic model and the results that were presented in DSEIS Sections 4.5.1.2 and 4.5.1.3 are adequate to support the impact assessments of water quantity in this SEIS. As discussed in the NRC's response to Comment No. RP032-065, the ground-water model of the ore-zone aquifer during the Project's operation and aquifer-*

restoration phases predicted significant drawdowns in three wells within the Ross Project area and minor drawdowns in wells outside the Project area but within 3 km [2 mi] of the Project. SEIS Section 4.5.1.2 noted that a major variable in the predicted drawdown is the use of the Merit oil-field water-supply wells. To minimize the drawdown of the ore-zone aquifer, as indicated by Condition No. 10.19 of the Draft Source and Byproduct Materials License, the Applicant would not install wellfields south of the Little Missouri River until Merit's use of its oil-field water-supply wells has ceased or diminished to an acceptable level (NRC, 2014b). The effects of Draft License Condition No. 10.19 would minimize the drawdown of the aquifer. In addition, as described in the NRC's response to Comment No. RP035-038, the ground-water dispute between Merit and the Applicant has been resolved by Strata's amending its Permit to Mine application with the WDEQ to specify: 1) that all activities conducted under that Permit would be conducted in a manner to avoid any impact on the quality and quantity of ground water available to Merit from the Fox Hills aquifer under Merit's ground-water permits issued by the WSEO and 2) if necessary, Strata would provide Merit with an alternative water source which is acceptable to Merit and which meets certain criteria (WWC, 2012).

Because reversal of the drawdown would begin as soon as aquifer restoration were to be completed, the NRC has determined that the potential impacts of the Proposed Action's aquifer-restoration phase to ground-water quantity of the confined aquifers would be SMALL to MODERATE. An analysis of the cumulative impacts of consumptive ground-water use is provided in SEIS Section 5.7; the analysis concluded that cumulative impacts to ground-water quantity in the Lance and Fox Hills aquifers would be SMALL.

The NRC staff reviewed the information provided by the Applicant and documented its findings in its SER (NRC, 2014a). SER Section 3.1.3.6 notes that the Applicant quantifies the impacts of the Ross Project in situ uranium-recovery activities based upon a maximum of 10 wellfield modules in operation at any one time during the Project's lifecycle (i.e., concurrent operation of multiple wellfields). The NRC staff found, as presented in SER Section 3.1.3.5, that the Applicant made commitments to protect against unwanted vertical and horizontal migration of fluids (i.e., lixiviant). The NRC staff also found, as presented in SER Section 3.1.3.4, that the Applicant provided an acceptable description of the instrumentation and monitoring that would prevent and correct spills, releases, and/or excursions (NRC, 2014a). Therefore, the NRC staff finds that the concern raised by the commenter has already been addressed and documented by the NRC staff in the Draft License and the SER; the addition of the commenter's suggested text is not warranted. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP035-006

The commenter noted that the DSEIS provided a good synopsis of the specific Project-phase environmental impacts. However, because the Project phases occur concurrently, the commenter stated that a full picture of surface- and ground-water environmental impacts at any one time at the Ross Project was difficult to understand. The commenter recommended adding a flow diagram or table that provides a water balance for each process/phase that would provide a more inclusive representation of the surface- and ground-water uses as well as the related impacts and mitigating measures.

Response: *Supplemental information has been added to FSEIS Section 4.5.1 regarding the ground-water balance throughout the Project. New Figures 4.2, 4.3, and 4.4 in the FSEIS illustrate the water balance during three Project periods: operation only, operation concurrent*

with aquifer restoration, and restoration only, respectively. In addition, FSEIS Table 4.9 has been revised to include water-balance and waste-disposal rates during the three periods in the four phases.

Comment: RP035-011

The commenter asked how the collection of seepage within the CBW would affect downgradient ground water.

Response: *As described in Section 2.1.1.1 of the SEIS, the CBW is a low-permeability barrier that is designed to prevent grount water flow through the unconsolidated sediments into the area of the processing plant from the regional ground-water aquifer outside the CBW. The water levels north of the CBW would be maintained lower than the water levels outside the CBW by ongoing pumping. As described in SEIS Section 4.5.1, the change caused by the barrier would not result in significant changes to ground-water outside the CBW and are thus not considered an impact. As noted in the response to Comment No. RP024-417, the CBW would cause localized impacts to the shallow aquifer. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP035-013

The commenter requested information about other wells in the Lance District that are in the Deadwood and Flathead Formations, which are targeted for the UIC Class I injection wells at the Ross Project.

Response: *The UIC Class I Permit issued to the Applicant by WDEQ/WQD for deep-injection wells notes that there are no wells in the area of review that penetrate the confining units above the Deadwood and Flathead Formations (WDEQ/WQD, 2011b). The deep wells associated with the oil and gas industry are completed in the Minnelusa Formation. The top of the Deadwood and Flathead Formations are over 490 m [1,600 ft] below the bottom depth of the wells in the Minnelusa Formation. No changes were made to the SEIS beyond the information provided in this response.*

B.5.15.4 References

(US)EPA (U.S. Environmental Protection Agency). *Aquifer Exemption Approval, Strata Energy Corporation, Ross ISR Project, Upper and Lower Fox Hills-Ore Zone Aquifer, Crook County, WY*. Washington, DC: USEPA. May 15, 2013. ADAMS Accession No. ML13144A108.

(US)NRC (Nuclear Regulatory Commission). "Staff Technical Position, Alternate Concentration Limits for Title II Uranium Mills." . Washington, DC: USNRC. 1996b. ADAMS Accession No. ML091420242.

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(US)NRC. "Standard Review Plan for the Review of DOE Plans for Achieving Regulatory Compliance at Sites with Contaminated Ground Water under Title I of the Uranium Mill Tailings

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(US)NRC. "Standard Review Plan for In Situ Leach Uranium Extraction License Applications, Final Report." NUREG–1569. Washington, DC: USNRC. 2003a. ADAMS Accession No. ML032250177.

(US)NRC. "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978. Final Report. " NUREG–1620. Washington, DC. USNRC: 2003c. ADAMS Accession No. ML031550569.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "NRC Regulatory Issue Summary 2009-05, Uranium Recovery Policy Regarding: (1) The Process for Scheduling License Reviews of Applications for New Uranium Recovery Facilities and (2) The Restoration of Groundwater at Licensed Uranium In Situ Recovery Facilities." Washington, DC: USNRC. 2009c. ADAMS Accession No ML083510622

(US)NRC. "Staff Assessment of Ground Water Impacts from Previously Licensed In-Situ Uranium Recovery Facilities." Memorandum from C. Miller to Chairman Jaczko, et al. Washington, DC: USNRC. July 10, 2009d. ADAMS Accession No. ML091770385.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

WDEQ/LQD (Wyoming Department of Environmental Quality/Land Quality Division). "Noncoal In Situ Mining," *Rules and Regulations*, Chapter 11. Cheyenne, WY: WDEQ/LQD. 2005.

WDEQ/LQD. "Noncoal Mine Environmental Protection Performance Standards." *Rules and Regulations*, Chapter 3. Cheyenne, WY: WDEQ/LQD. 2006.

WDEQ/WQD (WDEQ/Water Quality Division). *Authorization to Discharge Wastewater Associated with Pump Testing of Water Wells Under the Wyoming Pollutant Discharge Elimination System*. Authorization #WYG720229. Cheyenne, WY: WDEQ/WQD. March 2011a. ADAMS Accession No. ML13015A695.

WDEQ/WQD. *Strata Energy*, *Inc. – Ross Disposal Injection Wellfield*, *Final Permit 10-263*, *Class I Non-hazardous, Crook County*, *Wyoming*. Cheyenne, WY: WDEQ/WQD. April 2011b. ADAMS Accession No. ML111380015.

WWC Engineering (WWC). Ross ISR Project, Permit to Mine Application, TFN 5 5/217, Submittal of Mine Plan Replacement Page per the Joint Stipulation Resolving EQC Docket No. 12-4803. October 24, 2012. ADAMS Accession No. ML12299A040.

WWC. "RE: Info Request." Email to J. Moore, NRC, from B. Schiffer. Dated January 13, 2014. Gillette, WY: WWC. 2014c.

B.5.16 Surface-Water Resources

B.5.16.1 Impacts to Surface Drainages and Surface Waters

Comment: RP017-003

The commenter recommended that the FSEIS include a discussion of how the water would be stored or disposed of if the water quality did not meet the standards of the temporary WYPDES Permit that the Applicant would be required to possess during well development.

Response: *If the water quality does not meet the discharge standards of the WYPDES Permit, the Applicant would have to treat the water or dispose of the water in the UIC Class I deep-disposal wells that would be present at the Ross Project. The Applicant would manage the water that did not meet surface-discharge limits in a similar manner as it would manage any liquids produced from wells undergoing maintenance in active wellfields. For maintenance, ground water would be collected in a mobile storage tank parked at the well. The tank would then be moved to the CPP and the collected liquids would be emptied into the lined surface impoundments that would be located near the CPP, or they would be injected in a deep-disposal well (Strata, 2011b). As explained in the NRC's response to Comment No. RP032-015, water produced during well development and aquifer testing would likely meet Wyoming's WYPDES discharge standards. This is because the ground water discharged during the construction of the wells and initial testing of ground-water quality during pre-licensing, site-characterization efforts met the same Permit requirements and the same standards. No changes beyond those related to the specific description of the WYPDES Permit were made to the SEIS in response to this comment.*

Comment: RP017-021

The commenter noted that water-quality parameters to be analyzed by the Applicant during the Ross Project should include selenium and salinity in order to ensure that such constituents do not accumulate on the ground or get carried in overland flow in high concentrations that could impair surface waters. The commenter stated that this is particularly important for selenium, because the Ross Project is located in the upper Cretaceous Lance and Fox Hill Formations, which are high in selenium.

Response: *The WYPDES Permit No. WYG72022, issued by the WDEQ, does not contain an effluent limit for selenium; however the water quality data collected by the Applicant during pre-licensing, site-characterization indicate that dissolved selenium is generally less than the lowest standard (aquatic life chronic value) of 0.005 mg/L for total recoverable selenium. As described in the response to Comment No. RP017-002, only ground water in the deep aquifer below the ore zone consistently contains selenium at concentrations above the standard of 0.005 mg/L. In addition, as discussed in the NRC staff's response to Comment No. RP032-015, the Applicant's annually renewed WYPDES Permit requires that discharges are conducted in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, or other "Waters of the State" at the point of discharge. In addition, the Permit requires that there shall be no deposition of substances in quantities which could result in significant aesthetic degradation or in degradation of habitat for aquatic life, plant life, or wildlife, or which could adversely affect public-water supplies or those intended for agricultural or industrial use (WDEQ/WQD, 2012). See also Comment Nos. RP017-003 and RP032-058 for additional information related to the Applicant's WYPDES Permit. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-411

The commenter recommended that the SEIS describe the BMPs proposed for the protection of water resources at the Ross Project in Section 4.5.1.

Response: *The staff has revised the text in FSEIS Section 4.5.1 to include the following at the end of the paragraph:*

> *These BMPs would include procedures for the Applicant to minimize surface-water impacts by limiting soil disturbance and compaction, diverting and controlling runoff, avoiding or promptly detecting and correcting accidental spills and leaks, and completing reclamation in a timely manner. Mitigation measures to minimize ground-water-quality impacts in the overlying and underlying aquifers include the Applicant's properly abandoning exploration and delineation drillholes, limiting over-penetration during drilling, employing onsite engineering/geologic supervision during well drilling and development, using proper well construction techniques, implementing an approved mechanical integrity testing (MIT) program, and the excursion monitoring program. Potential ground-water-quantity impacts in the ore zone would be mitigated by the Applicant's minimizing consumptive use (e.g., monitoring nearby stock and domestic wells, designing balanced wellfields, and minimizing the production bleed). Impacts to ground-water quality in the ore-zone aquifer would be mitigated by ground-water restoration, and excursion monitoring.*

Comment: RP024-419

The commenter referenced the following statement from DSEIS Section 4.5.1.2: "Ground water produced from monitoring and testing wells outside the exempt (ore-zone or OZ) aquifer would be discharged according to a temporary WYPDES Permit, comparable to the permit obtained by the Applicant for development of its monitoring wells installed in 2010. This water would either infiltrate into the ground or add to the surface water in the Little Missouri River." The commenter suggested describing the mitigation measures that the Applicant proposed to prevent discharge water from reaching surface waters in order to comply with its current temporary WYDES Permit. The Permit stipulates that "There shall be no deposition of substances in quantities which could result in significant aesthetic degradation, or degradation of habitat for aquatic life,

plant life, or wildlife; or which could adversely affect public water supplies or those intended for agricultural or industrial uses."

Response: *The mitigation measures proposed by the Applicant in its surface-water pollution prevention plan were described in DSEIS Section 4.5.1.2, a few paragraphs after the statement referenced by the commenter. In response to this comment, three modifications have been made to the paragraph noted by the commenter. The modified paragraph in the FSEIS Section 4.5.1.2 now directs the reader to a discussion of WYPDES Permit No. WYG72022 in FSEIS Section 2.1.1.5. FSEIS Section 2.1.1.5 now explains that the WYPDES Permit does not allow degradation of habitat for aquatic life, plant life, and wildlife, nor does it allow discharges that would adversely affect public-water supplies or supplies intended for agricultural or industrial uses. The Section now notes that the mitigation measures proposed by the Applicant would ensure that habitat and water-supply degradation would not occur. See also response to Comment No. RP032-058 for a discussion of the temporary WYPDES Permit's renewal.*

Comment: RP024-421

The commenter noted that the Applicant would apply for and obtain an "Industrial General Permit for Storm Water Discharges" ("General Storm Water Permit") from the WDEQ/WQD prior to construction and operation. The commenter further explained that the only requirement associated with this type of permit is that the operator periodically inspect the BMPs and complete documentation of the required inspections. The commenter also stated that the General Storm Water Permit would not establish numeric effluent limits.

Response: *The text in FSEIS Section 4.5.1.2 has been revised, and the staff has included information on the requirements for a General Storm Water Permit.*

Comment: RP032-015

The commenter referenced the statement in DSEIS Section 2.1.1.1, "The Applicant expects that the water produced during well development would meet Wyoming's temporary Wyoming Pollution Discharge Elimination System (WYPDES) discharge standards, which would allow this water to be discharged directly to the ground surface (WDEQ/WQD, 2007)." The commenter asked the following questions: 1) What is the empirical basis for the Applicant's "expectation" and do the NRC and the EPA agree with the basis? 2) Would the WYPDES discharge standards be sufficiently protective so that the produced water would not cause any harm to wildlife, surface-water quality, or shallow aquifers if discharged directly to the ground surface? 3) Would the NRC staff describe the NRC's licensing requirement in the event that the water produced during well development does not meet WYPDES discharge standards? 4) Would the NRC staff describe any contingency plans and capabilities that would be required under the proposed license for the Applicant's safely disposing of the produced water from well development if the Applicant's expectation were proved to be incorrect?

Response: *1) The expectation that water produced during well development and testing would meet Wyoming's WYPDES discharge standards is based upon the fact that the ground water discharged during construction, installation, and initial testing of the wells prior to the license application's being submitted (i.e., during pre-licensing, site-characterization efforts) met all WYPDES Permit requirements. Effluent limits (i.e., discharge standards) contained in Strata's temporary WYPDES Permit apply to pH, total suspended solids, TDS, total uranium, and total recoverable radium-226. The pre-licensing water-quality samples collected from these*

monitoring wells also generally met the discharge standards in the WYPDES Permit (see Table 3.6 in SEIS Section 3.5.3 for pre-licensing, site-characterization water-quality data).

2) The Applicant's annually renewed WYPDES Permit requires that discharges are conducted in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, or other "Waters of the State" at the point of discharge. In addition, the Permit requires that there would be no deposition of substances in quantities which could result in significant aesthetic degradation or in the degradation of habitat related to aquatic life, plant life, or wildlife; moreover, the discharges cannot adversely affect public-water supplies or those intended for agricultural or industrial use (WDEQ/WQD, 2013). Thus, any surface discharges the Applicant might make after permitting would be limited to those that do not harm wildlife, surface waters, and shallow aquifers.

3) and 4) The NRC does not have authority over the water produced during well development; ground water that has not been affected by uranium-recovery activities (i.e. that has not come into contact with lixiviant) is not regulated by the NRC. If such water were not to meet WYPDES discharge standards, then the Applicant would need to develop a plan that would be compliant with its WYPDES Permit. The Applicant is responsible for managing ground water produced from the wells in a manner that meets the requirements of the WDEQ. The NRC staff's response to Comment No. RP017-003 discusses the actions proposed by the Applicant for disposal of ground water from wells outside of active wellfields that do not meet the discharge standards of its WYPDES Permit.

The NRC staff has revised the text in FSEIS Section 2.1.1.1 to address the commenter's questions by adding the supplemental information offered in this response. Also, please see the NRC's response to Comment No. RP032-058 for additional information regarding the Applicant's WYPDES Permit.

B.5.16.2 Wetlands

Comment: RP001-001

The commenter pointed out that an initial, pre-construction notification had been submitted to the U.S. Army Corps of Engineers (USACE) for the Ross ISR Project—Phase I, where Phase I includes construction of access roads, the CPP and other components of the Project facility, and monitoring wells. The commenter stated that due to the potential for the Ross Project to adversely affect historical and cultural resources, the USACE could not verify a Section 404 Nationwide Permit ("404 Permit") for construction in "Waters of the U.S." until such time as the NRC has completed its required evaluation of the impacts on historical and cultural resources in the 404 Permit's area of potential effects (APEs) as well as its required consultation process. The commenter also noted that compensatory mitigation for wetland losses through an approved mitigation plan would be required by a 404 Permit and that other aquatic-resource losses could require mitigation through a 404 Permit or in compliance with Executive Order No. 11990.

Response: *The text in FSEIS Section 3.5.2 has been modified to indicate that USACE cannot verify a 404 Permit until the NRC has completed its evaluation of impacts on historical and cultural resources in the 404 Permit's APE as well as its related consultation efforts.*

B.5.16.3 Miscellaneous Surface-Water Comments

Comment: RP024-271

The commenter suggested that the NRC staff revise the statement in DSEIS Section 3.5.1, "In addition to the permitted surface-water rights, there are at least 17 additional reservoirs within or adjacent to the Ross Project area, although none of these reservoirs was listed in the WSEO water-rights database, except for the Oshoto Reservoir (Strata, 2011a)." The commenter suggested that the discussion of Oshoto Reservoir be omitted, because the Reservoir *is* permitted, and that the discussion regarding reservoirs within and adjacent to the Ross Project area not listed in the WSEO water-rights database be clarified.

Response: *The NRC staff has revised the statement as noted by the commenter by deleting the following text: "except for the Oshoto Reservoir."*

Comment: RP035-009

The commenter noted the following paragraph in SEIS Section 4.5.1.1:

> Potential impacts to the quantity of water in the shallow aquifers during construction of the Proposed Action would be caused by the quantity taken from the Oshoto Reservoir and the quantity involved in the installation of the CBW surrounding the facility (i.e., the CPP and surface impoundments). In the vicinity of the Oshoto Reservoir, the Reservoir stage (i.e., the volume of water it contains) and the shallow-aquifers' water levels are closely related (Strata, 2012b). Although the Applicant anticipates an annual withdrawal of 4.6 ha-m/yr [37 ac-ft/yr] of water during construction, that volume is less than the permitted annual appropriation for the Oshoto Reservoir, 21 ha-m/yr [173 ac-ft/yr] (Strata, 2012b). Any changes in ground-water levels due to water usage from Oshoto Reservoir would be small and restricted to the area around the Reservoir.

The commenter recommended that the FSEIS provide additional information regarding the impacts to shallow ground water and the potential for associated impacts to wetlands and springs around Lake Oshoto in relation to its water use and Project construction.

Response: *The impact analysis presented in SEIS Section 4.5.1.1 was based upon the understanding that the small changes in water-levels would not affect the hydrologic balance of the Oshoto Reservoir. Because the Reservoir would continue to contain a significant depth of water, the weight of the water (i.e., the pressure of the water) would sustain infiltration and support springs that maintain wetlands associated with Oshoto Reservoir. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP035-028

The commenter noted that the Wyoming Water Development Commission (WWDC) publishes a northeastern Wyoming water-plan report that shows the Oshoto Reservoir's maximum capacity to be 339 acre-feet. The commenter stated that the information disclosed on the maximum capacity of the Oshoto Reservoir appears to be the current, annual water-rights appropriation and not the maximum capacity as stated.

Response: *The NRC staff agrees with the information provided by the commenter, that the capacity of the Oshoto Reservoir is 42 ha-m [339 ac-ft]. The FSEIS Section 3.5.1 has been revised to reflect the maximum capacity of the Oshoto Reservoir as indicated by the WWDC.*

Comment: RP035-038

The commenter noted that it had learned that, during the license-application period, a water-rights issue has arisen with other users of appropriated water from Oshoto Reservoir. The WSEO reported that a water-rights dispute had been lodged for adjudication on behalf of an oil company requiring water from Oshoto Reservoir for its use in enhanced oil recovery (EOR) with water-flooding techniques. This commenter recommended that the FSEIS reassess any changes to cumulative impacts and mitigation measures resulting from the potential water-use conflict.

Response: *The dispute referrenced by the commenter was Merit's request for hearing before the Wyoming Quality Council on Strata's application for a Permit to Mine for the Ross Project. The request for hearing was based upon Merit's concern that the Ross Project would diminish the quantity available and degrade the quality of the water in the Fox Hills aquifer, the aquifer that is used by Merit for EOR. Merit's request for hearing expressed concern that surface water from the Oshoto Reservoir would not be a suitable replacement for ground water from the Fox Hills aquifer because of diminished water quality. The dispute was resolved by Strata's amending its Permit to Mine application, which has now been submitted to WDEQ. The amendments include: 1) that all activities governed by Strata's Permit to Mine would be conducted in a manner to avoid any impact on the quality and quantity of ground water available to Merit from the Fox Hills aquifer under Merit's ground-water permits issued by the WSEO and 2) if necessary, Strata would provide Merit with an alternative water source acceptable to Merit, one that meets certain criteria (WWC, 2012). No changes were made to the SEIS as a result of this comment beyond the information provided in this response.*

B.5.16.4 References

(US)ACE (U.S. Army Corps of Engineers). Letter from P. Wolken, U.S. Army Corps of Engineers, Omaha 34 District, Wyoming Regulatory Office, to T. Simpson, Strata Energy, Inc. December 9, 2010.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

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WWC Engineering (WWC). Ross ISR Project, *Permit to Mine Application, TFN 5 5/217, Submittal of Mine Plan Replacement Page per the Joint Stipulation Resolving EQC Docket No. 12-4803*. October 24, 2012. ADAMS Accession No. ML12299A040.

B.5.17 Ecology

B.5.17.1 General Ecology

Comment: RP003-005

The commenter noted the proximity of his/her home to the proposed Ross Project and the wildlife that visit, and expressed concern that the risks to his/her home, the neighbors' homes and the resident animals caused by the Project would exceed the value of the Project itself.

Response: *The SEIS has been prepared in accordance with the NRC guidance provided in NUREG–1748 (NRC, 2003b), and it is consistent with the NRC regulations at 10 CFR Part 51 that implement NEPA. The wildlife analyses are supported by sufficient technical bases, both tiered from the GEIS and based upon supplemental staff analyses. Section 7 of this SEIS provides an analysis of the costs and benefits of the Proposed Action and the Alternatives. No changes were made to the SEIS beyond the information provided in this response*.

Comment: RP017-002

The commenter recommended that the spill control BMPs that are discussed in FSEIS Sections 4.4.1.2 and 4.5.1.2 be made available to reviewing agencies and other reviewers to assist them in ensuring that the prescribed measures would protect fish and wildlife resources in the event of spills or leaks. The commenter opined that the SEIS stated that appropriate spill control BMPs would be defined in the final license, and it is these that should be available. The commenter also noted that high selenium concentrations could occur in waste water from ISR of uranium ore as uranium-bearing geologic formations are usually associated with seleniferous strata. Accidental releases and spills of uranium-bearing water can result in the ponding or pooling of this water, which could be ingested by local wildlife such as migratory birds, thus exposing the wildlife to uranium, other radionuclides, and selenium. Releases or spills of uranium-bearing water could also reach surface waters, which could impact aquatic organisms inhabiting the affected waters.

Response: *The mitigation measures and BMPs proposed by the Applicant to control impacts as a result of releases and spills were described in SEIS Sections 4.4.1.2 and 4.5.1. Currently, Draft License Condition No. 10.4 indicates that the Applicant would develop and implement written SOPs prior to uranium recovery operation for emergencies, potential accidents, and other unusual occurrences. These occurrences include significant damage to equipment or the facility, breaks in pipelines and spills, loss or theft of yellowcake or sealed sources, significant fires, and other natural disasters. The NRC staff reviewed the commitments by the Applicant to prepare a response plan for these emergencies, and it finds that the information is adequate because it meets the requirements of 10 CFR Part 20 and is consistent with current industry standard practices (NRC, 2014a).*

Regarding the commenter's concern about exposing local wildlife to selenium, the following factors apply: 1) the Applicant has committed to design features and operational practices to prevent and mitigate releases or spills of fluids potentially containing selenium (see FSEIS

Section 4.4.1.2); 2) the Applicant would be bound by WYPDES Permit No. WYG720229 to control discharge of ground water when drilling into the exempted aquifer (the Permit does not contain an effluent limit for selenium); 3) the Applicant has committed to reclaiming and restoring the mud pits it constructs during well and drillhole installation, usually within one construction season (see FSEIS Section 4.14.1.1); and 4) the 2010 water-quality data from the wells installed by the Applicant to characterize the ore-zone (OZ) aquifer and the aquifers above and below the OZ show that dissolved selenium was below 0.005 mg/L in all samples obtained from the aquifers above the OZ and in 22 of the 24 samples from the ore-zone aquifer. The dissolved selenium in the aquifer below the OZ ranged from less than 0.005 mg/L to 0.023 mg/L. Thus, no changes were made to the SEIS beyond the information provided in this response.

Comment: RP024-118

The commenter suggested that the NRC staff, to be consistent with Strata's license application, omit "wildlife and other intruders" from the following statement in Section DSEIS 2.1.1.1, Ross Project Wellfields: "The wellfields would be fenced to exclude livestock, wildlife, and other intruders."

Response: *The NRC agrees with the commenter. (See also Comment Nos. RP036-004, RP036-028, RP036-029, and RP036-034 which are also related to fencing.) The NRC staff has revised the text in FSEIS Section 2.1.1.1 as suggested by the commenter.*

Comment: RP024-474

The commenter questioned whether an increased risk of soil erosion would be relevant to the potential impacts on the local ecology and suggested that the discussion in DSEIS 4.6.1.1 be omitted.

Response: *Increased soil erosion has the potential to result in higher sediment loading in surface-water bodies, which in turn could impact aquatic species. The NRC staff, however, has edited FSEIS Section 4.6.1.1 to clarify the discussion related to soil-erosion impacts.*

Comments: RP024-478; RP024-479; RP036-008; RP039-007; RP039-009

The commenters asked that the FSEIS discuss and clarify certain ecological information, including the wildlife and vegetation species identified in the Project area and along related transportation routes, the Powder River and Black Hills herd units for white-tailed deer, and the possible impacts to the ecology, particularly to protected species. One commenter suggested that elk would not be impacted because they were not observed during the wildlife surveys and the area is not considered crucial habitat or a migration corridor.

Response: *The species identified at the Ross Project are discussed in SEIS Section 3.6, and protected species are specifically discussed in SEIS Sections 3.6.1 and 3.6.1.4. No Federally listed threatened or endangered species have been identified in the Project area. Potential impacts to wildlife as a result of transportation activities are discussed in SEIS Sections 4.3, Transportation, and 4.6, Ecology. Measures to mitigate ecological impacts are also included in these two SEIS Sections. Given the mitigation measures described therein, the NRC staff concluded that impacts to wildlife and vegetation that result from all Project activities would be SMALL.*

The NRC agrees with the commenter, who correctly identified that the Ross Project is within the habitat of the Powder River and Black Hills white-tailed deer herd units. FSEIS Section 3.6.1.2 has been revised to make clear that the white-tailed deer-herd units might be present at the Ross Project area. With respect to the occurrence of elk in the Project area, as documented in SEIS Section 3.6.1.2, elk have *been recorded in the area by the Wyoming Game and Fish Department (WGFD). Therefore, it is appropriate to discuss potential impacts to this species, and SEIS Section.3.6.1.2,* ***Mammals****, does so.*

Comment: RP036-054

The commenter agreed with the SEIS's conclusion of minimal impact to aquatic resources.

Response: *The NRC acknowledges this comment. Due to the general nature of the comment, no changes were made to the SEIS beyond the information provided in this response.*

B.5.17.2 Impacts to Terrestrial Ecology and Wildlife

Comments: RP017-001

The commenters expressed concern with potential impacts to wildlife from elevated levels of selenium, other metals, salt and other chemicals in the liquids stored in the evaporation ponds.

Response: *The surface impoundments (i.e., evaporation ponds) would be fenced in a manner that would exclude wildlife access, with the exception of avian species. The NRC staff acknowledge the risk to avian species posed by surface impoundments as described in SEIS Section 4.6.1.2. The Applicant has proposed mitigation measures to reduce this risk, which led to the NRC determination that the potential impacts to avian species posed by the surface impoundments would be SMALL. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP017-008; RP017-023; RP036-002; RP036-025; RP036-031

The commenters requested additional discussion regarding impacts to bird species, including waterfowl. One commenter expressed concern about selenium concentrations in the waste water stored in the proposed surface impoundments at the Ross Project as well as the possibility that selenium bio-accumulation could occur in birds when they repeatedly alight on the impoundments. This comment was made in reference to Section 2.1.1.1 in the DSEIS.

Response: *As documented in the GEIS, the NRC staff has concluded that when BMPs, such as avian deterrents, are used during the management of surface impoundments, such as those proposed by the Applicant, the potential ecological impacts resulting from waste-water management in uncovered surface impoundments is SMALL. In addition, there have been no reported impacts to wildlife as a result of birds' landing, resting, and/or perching on impoundment surfaces or otherwise contacting the waste water in the surface impoundments at NRC-licensed uranium-recovery facilities (NRC, 2009b). As discussed in SEIS Section 4.6.1.2, the Applicant would use a radar-hazing system designed to reduce the birds' alighting on the impoundments. Therefore, the NRC staff concluded that the potential impact would be SMALL. In addition, although there is no straightforward exposure pathway that could result in significant biocentration by wildlife at the Ross Project, the small potential for selenium bioaccumulation as a result of accidental releases or spills at the Project is discussed in FSEIS Sections 4.4.1.2 and*

4.5.1. See also Comment No. RP017-002 for additional information regarding selenium bioaccumulation. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP036-004; RP036-028; RP036-029; RP036-034

The commenter noted that Section 2.1.1.1 in the DSEIS indicated that the wellfields would be fenced to exclude livestock, wildlife, and other intruders and that the wellfields were described as consisting of approximately 40 ha [90 ac]. In one comment, the commenter inquired regarding the design of the fencing and whether wire fencing, which would exclude livestock and wildlife, or more flexible fencing was proposed by the Applicant. It was noted that wire fencing might not effectively exclude wildlife. In another comment, the commenter pointed out that SEIS Section 4.6.1.1 indicated the big-game movement would not be significantly impacted by the Ross Project. The commenter requested that the type and design of fencing intended for use at the Ross Project be discussed in the FSEIS and that the FSEIS address whether the fencing would be completely exclusionary or wildlife friendly. The commenter noted that a wildlife-friendly fencing design could consist of a four-strand design, with a smooth bottom wire at least 40 cm [16 in] off the ground, with barbed top wire no higher than approximately 110 cm [45 in] off the ground. Additionally, the commenter noted that WGFD suggestions regarding fencing are recommendations, not requirements.

Response: *As stated in Section 4.2.1.2 of the DSEIS, less than 12 percent of the Ross Project area would be fenced at any one time, and the area proposed for wellfields was identified as 65 ha [160 ac] in the license application. However, this entire area would not be engaged in uranium recovery at the same time (i.e., not all wellfields would be installed or operated at the same time; their development would be sequential). Twelve percent of the entire Ross Project area is approximately 83 ha [205 ac]. Thus, the NRC staff has assumed that there would be some areas where the exclusion of livestock, wildlife, and all other intruders would be necessary throughout the lifecycle of the Ross Project (e.g., due to safety, health, and security concerns, fencing around the surface impoundments and avian deterrents would be designed to prevent or deter intruders from accessing the impoundments). In its license application, the Applicant committed to working with WGFD on the fencing at the Ross Project. The license application stated that wildlife-friendly fencing would be used to allow big game and other wildlife to pass through as much of the Project area as possible. As discussed in the response to RP024-118, the SEIS has been revised to indicate that the wellfields would be fenced to allow wildlife passage. As a result of the Applicant's commitment to installing fencing that allows wildlife passage and to working with the WFGD, as stated in SEIS Section 4.6.1.1, the NRC staff concluded that the resulting impact to wildlife and big-game movement would be SMALL. Section 4.6.1.1 in the FSEIS has been revised to clarify that fencing, which would permit wildlife passage, would be used in as much of the Project area as possible and that the Applicant would work with WFGD on the fencing's design.*

Comment: RP036-026

Referring to Section 4.6.1 of the DSEIS, the commenter expressed concern about how wildlife would be affected by the noise that would be generated by the proposed Ross Project and the presence of humans. The commenter indicated that because the noise could be significant, the resulting impacts on wildlife should be evaluated in the FSEIS.

Response: *The NRC staff recognizes that there could be impacts on local wildlife due to Project noise and acknowledges that the increased presence of humans could also have impacts on nearby wildlife. These impacts were addressed in the DSEIS in Section 4.8.1.1, under "Noise" rather than "Ecology." The greatest noise levels would likely occur during the construction phase of the Ross Project, when the CPP, surface impoundments, and other structures would be constructed and the first wellfields would be installed and developed. It would be wildlife's natural reaction to avoid the area during this time, when humans and noise are present, and there are no obstacles to the wildlife's movement away from the proposed Project area. The NRC staff therefore finds that noise and human-presence impacts on wildlife would be SMALL. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP036-030

The commenter noted the following statement in the DSEIS, Section 4.6.1.1, Terrestrial Species, **Wildlife**: "Species that occur in the area have shown the ability to adapt to human disturbance in varying degrees, and each also has a high reproductive potential and tend[s] to re-occupy and adapt to altered or reclaimed areas quickly." The commenter requested that the scientific basis for this statement be cited or the statement be deleted in the FSEIS.

Response: *The NRC staff has revised FSEIS text in Section 4.6.1.1, Terrestrial Species, **Wildlife**, deleting the statement noted by the commenter.*

Comment: RP039-008

The commenter requested that the NRC staff consider impacts to native plant communities and any aquatic habitats, including wetlands and any other areas of water-saturated soils, if waste water application to land were to be considered by the Applicant. The commenter also asked that the NRC consider bio-concentration of pollution in animals and any impacts to the food chain (human or animal).

Response: *The Applicant did not include land application of waste water in its license application; thus, the NRC staff did not include any impact analyses of land application of waste water in Section 4 of the SEIS. No changes were made to the SEIS beyond the information provided in this response.*

B.5.17.3 Mitigation and Timing

Comments: RP017-004; RP017-022; RP036-039

The commenters noted that fencing the surface impoundments and using avian deterrents were proposed in DSEIS Section 4.6, but that the sides of the impoundments would be steep. Wildlife that find their way into the impoundments could find it difficult to escape. The commenters suggested that the impoundments be fitted with escape ramps to prevent wildlife fatalities.

Response: *The Applicant has committed to fencing the surface impoundments and using netting to deter birds from landing on the impoundment surfaces, which would reduce the likelihood of wildlife's accessing the impoundments. The Applicant has also committed to working with the WGFD on the fencing design. The NRC staff agrees that additional mitigation*

measures could be warranted should the proposed mitigation measures be shown to be insufficient after surface-impoundment construction and operation begins. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP024-660; RP024-727; RP032-010; RP032-011; RP036-001; RP036-023; RP036-024; RP036-035; RP036-038

The commenters submitted comments related to the mitigation requirements for impacts to ecological resources, including avian species, big game animals, small mammals and noxious weeds, and requested clarification of what mitigation measures would be required and what reporting would be necessary. In some cases, the commenters requested additional detail regarding specific mitigation measures. One commenter inquired as to whether or not adaptive mitigation would be implemented at the site.

Response: *The NRC would establish site-specific license conditions for the Ross Project, but only within the limits of its authority. In addition, State agencies and other Federal agencies would establish permit conditions for the proposed Ross Project based upon their statutory and regulatory authority. Mitigation measures related to ecological impacts are included in SEIS Section 4.6; the measures outlined include those requested by other agencies, as well as those required by the WDEQ/LQD permit. The details of many of those mitigation measures, beyond those required in this SEIS, will be included in plans required by other permits. For example, the control of weeds would include timely reseeding, monitoring for the presence of noxious weeds, and spraying as necessary. These measures are discussed in SEIS Sections 4.6.1 and 6.5.1. Additional details would be outlined in an approved WDEQ/LQD reclamation plan. As also outlined in SEIS Section 6.5.2.1, mitigation measures for the protection of wildlife will be evaluated on an annual basis, and changes recommended if necessary. Text in SEIS Sections 4.6.1 and 5.8.3 was edited to increase clarity with respect to ecological mitigation and survey reporting.*

B.5.17.4 Threatened and Endangered Species

Comments: RP017-006; RP017-009, RP024-659, RP036-009, RP036-010, RP036-016; RP036-053

The commenters clarified and updated information on the USFWS and WGFD lists related to threatened, endangered, and otherwise protected species. One commenter discussed its plans with respect to protected species, including Federally listed species and identified areas of the DSEIS that needed clarification with respect to the different species on the lists maintained by the State and Federal agencies. In addition, Wyoming noted that it had changed the name of the WGFD's list from "Species of Concern" to "Species of Greatest Conservation Need."

Response: *In response to these comments, the NRC staff revised the text in FSEIS Section 3.6.1.4, including Table 3.13, and in SEIS Section 5.8, to reflect the updated lists and plans with respect to protected species, including the Federally listed species. In addition, all references to the "Wyoming Species of Concern (WSOC)" list was changed to "Species of Greatest Conservation Need (SGCN)" throughout the FSEIS. Finally, the NRC staff clarified text in FSEIS Section 5.8.3 to state that, although the USFWS has designated the Greater sage-grouse as a "Candidate Species" under the ESA, since Wyoming issued EO 2011-5, the USFWS has endorsed the State's conservation strategy, when fully supported and implemented, as a means to prevent a listing decision.*

B.5.17.5 Sage-Grouse

Comments: RP024-481; RP024-482; RP036-013; RP036-015; RP036-033; RP036-036; RP036-056; RP036-011; RP036-012, RP036-014; RP036-052

The commenters requested that information on the two sage-grouse leks in the vicinity of the Ross Project area be updated from 2010 information, and that text be clarified regarding the status of these leks in accordance with the Wyoming Governor's 2011 Executive Order (EO) and the corresponding BLM guidelines.

Response: *The NRC staff has revised the text in FSEIS Section 3.6.1.4 (see Table 3.13) and FSEIS Section 4.6.1.1,* **Protected Species***, to update the information on the two sage-grouse leks in the vicinity of the Ross Project. The Ross Project, however, is not located in a sage-grouse core area. The revisions the NRC staff has made include data from 2011 and 2012 as well as a reference to the 2011 EO.*

B.5.17.6 Habitat Loss and Fragmentation

Comments: RP024-477; RP024-486; RP036-022

The commenters requested clarification of the revegetation requirements, specifically related to the type of seeds that will be used and the parties who will approve the seed mixture. One commenter added that a shrub component should be added to the revegetation plan to reestablish lost shrubland habitat.

Response*: For the revegetation plan, the NRC recognizes that sagebrush is not specifically included in the Applicant's proposed seed mixture as described in SEIS Section 4.6.1.1; however, WDEQ/LQD and the landowners approve the seed mixtures of native plants and grasses, which may vary in species composition. At the time of decommissioning, the Applicant would submit an updated reclamation plan for approval, following review and approval by appropriate State and Federal agencies. Further, as stated in SEIS Section 4.6.1.1, WDEQ/LQD has the authority to determine the final revegetation for all the land within the proposed Project area. FSEIS Section 4.6.1.1 was clarified to include approval of the seed mixtures by the landowners.*

Comments: RP036-017; RP036-021; RP036-027; RP036-032; RP036-047; RP036-048; RP036-049; RP036-050; RP036-051; RP039-010

The commenters expressed concern about the cumulative impacts to sagebrush shrubland due to activities in the Powder River Basin, and the resulting habitat fragmentation. One commenter had numerous comments regarding potential impacts to sagebrush shrubland, the sequencing of reclamation, and the time required for reestablishment of this vegetation community.

Response: *The NRC staff recognizes the difficulty in re-establishing sagebrush shrubland, as discussed in SEIS Section 4.6.1.1. The Applicant has developed a Reclamation Plan as part of its WDEQ/LQD permit, which includes specific methods to minimize impacts to sagebrush shrubland vegetation. Although this vegetation community accounts for approximately 22 percent of the total area of the Ross Project, the majority of impacts to vegetation will occur to upland grassland and hayfield areas (between 70 and 80 percent of the total disturbance will be*

within these vegetation communities). Therefore, it is anticipated that the total impact to sagebrush shrubland will be less than between 20 and 30 ha [49 to 74 ac]. Although the phasing of construction activities over time will reduce the amount of surface area disturbed, the NRC staff recognizes that given the years needed to reestablish sagebrush shrubland, the phasing alone will not be enough to mitigate the impacts. Therefore, the Applicant has committed to additional mitigation measures, as discussed in SEIS Section 4.6.1.1, which include minimizing disturbances in sagebrush shrubland. The NRC has clarified that all of the proposed mitigation measures would be required in order to reduce impacts to vegetation at the Project.

The NRC has edited SEIS Section 5.8 to clarify that although reclamation has been conducted on one-half of the disturbed areas with the Powder River Basin, the vegetative communities may not yet be restored to functional habitat. Additionally, this section has been modified to recognize that although some vegetation communities could recover within five years of the initiation of restoration, it could take decades for the sagebrush shrubland community to recover, as discussed in SEIS Section 4.6.1.1. Additionally, SEIS Section 5.8.1.1 was revised to clarify the potential impacts to vegetation resulting from projects within the Powder River Basin. Based upon the information provided by the commenters, the cumulative impacts to vegetation was changed from SMALL to MODERATE.

B.5.17.7 Traffic and Noise Impacts

Comment: RP017-013

The commenter expressed concern over the potential negative impacts of Ross Project-related noise on wildlife receptors. Concern was also expressed that construction equipment, CPP equipment, and trucks could increase low frequency noise in and around Devils Tower as a result of Ross Project activities, thereby negatively impacting visitor experience. The commenter requested that the “cumulative effects” of noise sources that may be in operation simultaneously be addressed.

Response: *SEIS Section 4.6 discusses in detail potential impacts of Ross Project- generated dust and noise on the flora and fauna of the area. This discussion details potential impacts on wildlife. The NRC has also addressed the impact of noise on wildlife in its response to comments RP024-516, RP036-040, and RP036-041. The NRC has assessed the attenuation of noise with distance from a single or multiple sources on a multi-spectrum basis. The combined noise produced by multiple pieces of equipment (including trucks) in close proximity to one another was analyzed using standard charts for combining sound levels for equal and non-equal sources. Anticipated noise levels, even with predominant low frequency characteristics, will revert to ambient levels well before the 10 mile [52,800 ft] distant Devils Tower, due to attenuation of noise with distance.*

Sound propagation from point source(s) was estimated by the inverse distance law, i.e., that sound pressure levels decrease by (-) 6 decibels (dBs) per doubling of distance from the source. SEIS Table 4.5 provides estimated damping effects on noise levels of construction equipment using the inverse distance law to represent workers, the nearest residence from the Ross Project boundary, and the proposed CPP site. As stated in SEIS Section 4.8.1.1, noise levels are expected to be the greatest during construction. However, even with certain equipment such as impact wrenches, the primary locations of these noises would be at least 335 m [1,100 ft] from the nearest residence, and not expected to reach the 55 A-weighted

decibel (dBA) nuisance level. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP024-019; RP024-020; RP024-220

The commenter asked that a range of impacts (i.e., SMALL to MODERATE) be inserted in the discussion of the Ross Project's transportation impacts on local and county roads in the Executive Summary of the SEIS.

Response: *The NRC staff determined that the impacts to the local and county road network surrounding the Ross Project area would be MODERATE to LARGE during the construction, operation, and decommissioning phases of the Ross Project. With mitigation, however, these impacts would be ameliorated to SMALL to MODERATE. (Impacts to the Interstate highway system would be SMALL in all phases.) The "Transportation" section of the Executive Summary was revised to ensure that the magnitudes of the respective impacts are correctly stated. Table ExS.1 has also been revised to ensure clarity. Responses to similar comments are also included at Comments Nos. RP024-056, RP024-057, RP024-221, RP024-379, and RP024-472.*

Comment: RP024-509

The commenter suggested striking the statement, "As noted in GEIS Section 3.3.1, most ISR facilities are proposed for undeveloped rural areas at least 16 km [10 mi] from the nearest communities," because the nearest community is Moorcroft, approximately 35 km [22 mi] south of the Ross Project site.

Response: *The SEIS statement from the GEIS provides information about ISR facilities generally. As the commenter notes, however, the Ross Project site is more than twice as far (35 km [22 mi]) from the nearest community of Moorcroft. Accordingly, the NRC added text to FSEIS Section 4.8 to clarify the distances to the nearest communities.*

Comment: RP024-510

The commenter questioned whether the reference to DSEIS Figure 3.3 is correct, because it indicated that Figure 3.3 does not depict the residences near the Ross Project. The commenter suggested changing the reference to Figure 3.1, which depicts the four nearest residences to the Ross Project.

Response: *The NRC staff agrees with the commenter. The FSEIS has been revised in Section 3.2 to refer the reader to Figure 3.1.*

Comments: RP024-516; RP036-040; RP036-041

The commenters noted that SEIS Section 4.8 states that impacts to wildlife from noise would be small because wildlife would generally avoid areas where noise-generating activity is occurring. The commenters noted that although wildlife may avoid areas where disruptive construction or development noise is occurring, the SEIS should analyze avoidance as the impact, not the solution to the impact. Although noise may be temporary and may not entail the actual disturbance or long-term loss of habitat, it may constitute a short-term loss of habitat because the area of avoidance is unusable as a result of the noise conflict.

Response: *Impacts to wildlife from noise during construction would be temporary and of relatively short duration. The GEIS evaluated the potential impacts to wildlife as ranging from SMALL to MODERATE, depending on site specific conditions, including the availability of adjacent habitat and the presence of critical habitat. The amount of land impacted by the Ross Project (133 ha [280 ac]) is SMALL (see SEIS Section 4.2.1.1). Furthermore, the habitat within the Ross Project is not critical for any big-game species or migration corridors (see SEIS Section 4.6.1.1), and sage grouse have not been observed on the Ross Project site. There is adequate habitat adjacent to the site in the surrounding community, and the wildlife would return to the Project Area once the temporary noise activities had ceased. Finally, WGFD mitigation requirements would be implemented, as necessary, and as outlined in SEIS Section 4.6.1.1. Therefore, the overall impact to wildlife resulting from noise impacts would be SMALL. The SEIS was revised to reflect the information provided in this response.*

Comment: RP024-672

The commenter questioned whether an increase in truck noise identified in the cumulative impacts had been double counted.

Response: *The NRC has clarified Section 5.11, indicating that the increase in truck noise was based upon the maximum yellowcake production rate of 1.4 million kg/yr [3 million lb/yr], which includes IX resin delivery from the Barber satellite area to the Ross Project's CPP, and that truck noise would not greatly increase due to the operation of additional Lance District satellite areas during overlapping phases, because the approximate number of vehicles—400—has already been considered in SEIS Section 4.8.*

Comment: RP024-751

The commenter suggested that the NRC staff revise language in DSEIS Section 5.11 indicating that there could be some increase in noise because of the additional uranium-loaded resin shipments as such resin is shipped from potential satellite areas in the Lance District. The commenter indicated this statement seemed to be double counted because the previous statement in the same paragraph specifies that the total number of shipments described in the cumulative-impact analysis for noise presented in DSEIS Section 4.8 included “the truck delivery of uranium-loaded IX resins from the potential Barber satellite area to the Ross Project’s CPP.”

Response: *The NRC staff agrees that noise impacts could have been over-estimated. The noise levels discussed in DSEIS 4.8.1 were predicated upon the maximum yellowcake production rate of 1.4 million kg/yr [3 million lb/yr]. So, the next statement in the DSEIS, which suggested a potential increase in noise attributable to* additional *uranium-loaded resin trucks recovered at the Barber satellite area and trucked to the CPP, did indeed over-count the truck noise to and from the Ross Project area. The NRC staff has revised the arithmetic in the cumulative-impacts noise analysis in FSEIS Section 5.11 inasmuch as the maximum yellowcake production rate had already been evaluated in DSEIS Section 4.8.1. Therefore, the NRC has revised the analysis and subject paragraph for clarity, deleting the subject sentence.*

B.5.17.8 References

(US)NRC (Nuclear Regulatory Commission). "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." NUREG–1748. Washington, DC: USNRC. 2003b. ADAMS Accession No. ML032450279.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

B.5.18 Meteorology, Climatology, and Air Quality

B.5.18.1 Impacts to Air Quality

B.5.18.1.1 GHG and Climate Change

Comment: RP005-002

The commenter expressed concern with increases in fugitive dust created by additional traffic and fugitive dust inhalation by animals and humans who would be most exposed to it. The commenter noted that in the DSEIS the NRC staff concluded, based on the road dust estimates, that there is a potential for moderate dust emissions and impacts to the nearest residents. Therefore, short-term and intermittent air emissions may be visible to the residents near unpaved roads when vehicles travel on the roads. The commenter stated that the mitigation measures discussed in DSEIS Section 4.7.1.1 and in the Air Quality Permit to Construct issued by the WDEQ, and to which the Applicant has committed, should reduce but not eliminate Ross Project-related road dust, as well as minimize dust from pre-existing normal traffic levels.

Response: *Based on the road dust estimates, the NRC concluded that there is a potential of moderate dust emissions and impacts to the nearest residents when trucks are passing. Therefore, short-term and intermittent visible air emissions are possible to the residents near unpaved roads when vehicles (particularly trucks) travel on them. The mitigation measures discussed in Section 4.7.1.1 and in the Air Quality Permit to Construct issued by the*

WDEQ, and to which the Applicant has committed, should reduce but not eliminate Ross Project-related road dust, as well as minimize dust from pre-existing normal traffic levels. These mitigation steps include, but are not limited to, setting and enforcing appropriate speed limits, using chemical dust suppressants, encouraging employee carpooling, regular and unannounced WDEQ/AQD inspections, and twice-daily visual monitoring for effectiveness of duct control on access roads. A statement has been added to Section 4.7.1.1 regarding fugitive-dust mitigation measures to which the Applicant has committed for the nearest residences in its Air Quality Permit.

Comment: RP024-491

The commenter requested that greenhouse gas emissions from the Proposed Action be included.

Response: *Greenhouse-gas emissions are discussed as a cumulative impact in SEIS Section 5.10.2, and the discussion includes an estimation of the CO_2 emissions resulting from the project (Table 5.6). No changes were made to the SEIS beyond the information provided in this response.*

B.5.18.2 Impacts to Devils Tower National Monument

Comment: RP015-005

The commenter stated that the proximity of the project to Devils Tower threatens the economics of the region and the health and welfare of visitors to the National Monument due to contamination, dust, noise, and truck traffic.

Response: *The NRC acknowledges the uniqueness and value of Devils Tower. The analyses in the SEIS show that no impacts on the health and welfare of its visitors would occur due to contamination, dust, noise, and truck traffic. These analyses included identification of the predominant and high speed-wind event dispersion direction as to the south-southeast, combined with the channeling effects of the regional landscape (SEIS Section 4.7).*

GEIS Section 4.2.6 determined that uranium-recovery facilities are not, in general, major air-emission sources, and that potential air-quality impacts of an ISR facility are small (NRC 2009b), if three conditions were met at a specific facility. These included particle and gaseous emissions being within regulatory limits, National Ambient Air Quality Standards (NAAQS) compliance for regional air quality, and that the facility would not be classified as a major source under New Source Review or Title V air-quality permit programs (SEIS Section 4.7.1). The Ross Project meets these three conditions.

The Ross Project will be subject to the Wyoming Air Quality Standards and Regulations (WAQSR), Chapter 3, Section 2(f) regulating fugitive dusts from point sources and to the WDEQ/AQD regulations on general fugitive-dust emissions. In the Ross Project Air Quality Permit Application, requirements for BMPs and Best Available Control Technology (BACT) to mitigate fugitive dust and gaseous air emissions are described (WDEQ/AQD, 2011). These emissions would be limited in duration depending on the Project phase, as explained in SEIS Sections 4.7.1.1 through 4.7.1.4 and quantified in SEIS Table 4.5.

Two studies are cited in SEIS Section 4.7.1.1 that reported deposition rates of mechanically-generated fugitive (road) dusts, finding that concentrations decline substantially with 110 – 150 m [330 – 490 ft] from the road due to gravitational setting rates, vertical mixing, transport times and impacting nearby obstacles (e.g., vegetation). The studies conclude that there is a higher probability that mechanically generated particles, such as those generated by vehicles, are removed from the atmosphere close to their sources than windblown dusts. One of these studies also examines the settling rates of windblown fugitive dusts, concluding that PM_{10} particles are deposited at a rate that is about an order of magnitude greater than $PM_{2.5}$. The studies indicate that the majority of fugitive dust impacts would not extend beyond the 80-km [50-mi] radius around the Ross Project area.

Wind erosion is predicted to generate much less fugitive dust from exposed areas than vehicle use on unpaved roads (SEIS Table 4.5). However, stability class information (a measure of atmospheric turbulence) collected from the Ross Project meteorological station (Strata, 2011a) indicated that the class distributions were predominantly neutral (SEIS Section 4.7.l).

Relative to noise, the GEIS indicates that 300 m [1,000 ft] is the distance outside of which noise from construction would return to the usual conditions (SEIS Section 4.8). GEIS (Section 4.4.7.1) stated that potential noise impacts would be greatest during construction (NRC, 2009b). Such noise would not exceed the 24-hour average sound-energy guideline of 70 dBA or the daytime average of 55 dBA, the level EPA identified as protective against interference of receptor activities and receptor annoyance (EPA, 1978). Table 4.6 in SEIS Section 4.8.1.1, shows how the noise level of heavy equipment falls to background at 760 m [2,500 ft] from the source. At 16 km [10 mi] distance, Devils Tower will not experience any noise from the Ross Project. Thru-truck traffic should not create noticeable additional noise at Devils Tower, due to paved roads and the attenuation of noise over distance. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP017-018

The commenter expressed concern that fugitive dust from the Ross Project site might reach a 80-km [50-mi] radius of the project site, including Devils Tower. The commenter recommends adaptive management of fugitive dust minimization measures.

Response: *In its Air Quality Permit Application, the Applicant elaborates on adaptive dust management, committing to BACT and BMPs to control fugitive dust at the source. An important component of adaptive management is visual observation on at least an hourly basis to monitor air quality in the Ross Project area and on a twice-daily basis along the primary access routes (see SEIS Section 4.7.1.1). In addition, regular inspections by WDEQ/AQD would be conducted. Other fugitive dust management techniques include, but are not limited to, roadway evaluation and improvement systems, leeward placement of stockpiles (where hills are available), prompt restoration of disturbed areas, application of water to exposed soils, chemical dust suppressants, speed limits, etc. Roadway-evaluation systems have been adopted as part of the MOU with Crook County (Strata and Crook County, 2011d). The performance-related approach is flexible in that provisions can be implemented quickly. Fugitive dust from the CPP has been estimated to be very small when BACT controls are applied. SEIS Section 4.7.1 presents data from two studies of the settling distances and transport times of near-road fugitive dust (Countess et al., 2001). These data suggest that fugitive dust will not be deposited near Devils Tower. No changes were made to the SEIS beyond the information provided in this response.*

B.5.18.3 Miscellaneous Meteorology, Climatology, and Air Quality Comments

Comment: RP024-190

The commenter suggested that the discussion of the non-radioactive particulate and gaseous emissions in DSEIS Section 2.1.1.5, Airborne Emissions, *Non-Radioactive Emissions*, be revised to be consistent with the Applicant's ER at Section 4.6.1.

Response: *The discussion in the DSEIS deliberately did not include some of the smaller sources of non-radioactive particulate and gaseous emissions that are inventoried in the license application because Section 2 is a broad overview of the Proposed Action, less detailed than the impact analyses in Section 4 of the SEIS. Nonetheless, the NRC has revised the text in Section 2.0 to highlight the smaller sources identified by the commenter.*

Comments: RP024-306; RP024-307; RP024-308; RP024-309

The commenter requested that the NRC staff clarify the speeds of the wind, the direction of the wind (as measured at the Ross Project area), and the period of record for the wind measurements depicted by the wind roses in DSEIS Figures 3.17 and 3.18.

Response: *The text in FSEIS Section 3.7.1, which discusses the information conveyed by the subject figures, has been edited to clarify the results of wind monitoring at the Project area, including the discussion of the prevailing wind speeds, direction, and the pertinent records kept.*

Comment: RP024-492

The commenter stated that the statement in DSEIS Section 4.7 that "combustion emission and fugitive dust emissions from the Ross Project would be moved by the highest wind speeds to the south-southeast" is inconsistent with the Ross Project wind patterns. The commenter stated that the predominant wind direction at the Ross Project area is from the south and that, therefore, combustion engine and fugitive dust emissions would be moved to the "north-northwest."

Response: *The prevailing wind direction at the site is southerly, except in May, when southeast winds prevail. Despite the southerly winds, the SEIS statement that the highest wind speeds tend to occur from the north-northwest is accurate. Therefore, no changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-493

The commenter noted that the text in DSEIS Section 4.7 regarding "unwanted vapor and gaseous emissions" was unclear, as was, in the opinion of the commenter, much of text regarding fugitive dust. The commenter recommended eliminating this text from that particular subsection (i.e., that Section's introduction).

Response: *The NRC staff agrees to a point; however, fugitive dust* is *a significant air pollutant. The intent of the discussion was to compare the significance of fugitive dust to other pollutants relative to other examples. Nevertheless, the potential confusion introduced by the*

original wording is acknowledged. The text in FSEIS Section 4.7 retains the identification of fugitive dust as a significant air pollutant, but it has been revised for more clarity.

Comment: RP024-500

The commenter requested that Table 4.5, under "[Non-Radioactive Emissions Summary] Construction Equipment and Truck Tailpipe Emissions," be revised to include all of the transportation-related emissions detailed by the Applicant in its responses to the NRC's RAIs on the license application (Strata, 2012a).

Response: *The NRC has added the information requested by the commenter to FSEIS Table 4.5.*

Comment: RP032-052

The commenter asked for a calculation of the CO_2 equivalent emissions for the project, per pound of yellowcake. The commenter asked that the calculation include all sources of electricity and fossil-fueled consumption for the life of the Ross Project.

Response: *As documented in Section 5.10.2 of the SEIS, the maximum annual CO_2 equivalent emissions for operations at the facility is 11,872 t [13,087 T]. The production of yellowcake is anticipated to be a maximum of 3,000,000 pounds per year, resulting in an estimated 8.7 pounds of CO_2 equivalent emissions per pound of yellowcake. This number only accounts for the emissions resulting from on-site plant operations, and does not include emissions from power plants providing electricity to the facility. Due to the interstate nature of the electrical grid, the actual source of the electricity for the plant is unknown, and therefore the CO_2 emissions for the electricity to be supplied to the plant cannot be calculated. No changes were made to the SEIS as a result of this comment.*

Comment: RP039-019

The commenter asked that impacts from truck traffic, dust, and noise be minimized.

Response: *The commenter's concerns are addressed in the responses to Comment Nos. RP016-005, RP017-012, RP017-013 RP017-018, and RP024-495.*

B.5.18.4 References

Countess, R., W. Barnard, C. Claiborn, D. Gillette, D. Latimer, T. Pace, and J. Watson. "Methodology for Estimating Fugitive Windblown and Mechanically Resuspended Road Dust Emissions Applicable for Regional Air Quality Modeling" in *10th International Emission Inventory Conference Proceedings*. Westlake Village, CA: Countess Environmental. May 2001. ADAMS Accession No. ML13022A448.

(US)EPA (Environmental Protection Agency). "Protective Noise Levels: Condensed Version of EPA Levels Document." EPA Report No. 550/9-79-100. ML13015A552. Washington DC: EPA. November 1978.

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices.* Docket No. 40-09091. Gillette, WY: Strata. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Air Quality Permit Application for Ross In-Situ Uranium Recovery Project*. Prepared for Strata Energy, Inc. Sheridan, WY: Inter-Mountain Laboratories, IML Air Science. 2011c. ADAMS Accession No. ML11222A060.

Strata and Crook County. *Memorandum of Understanding for Improvement and Maintenance of Crook County Roads Providing Access to the Ross ISR Project.* Sundance, WY: Crook County. April 6, 2011d. ADAMS Accession No. ML111170303.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

WDEQ/AQD (Wyoming Department of Environmental Quality/Air Quality Division). *Permit to Construct, Air Quality Permit #12198*. Cheyenne, WY: WDEQ/AQD. 2011. September 13, 2011. ADAMS Accession No. ML112770430.

B.5.19 Historical and Cultural Resources

B.5.19.1 Potential Impacts to Cultural, Historical, and Sacred Places

Comments: RP024-041; RP024-042; RP024-058; RP024-085; RP024-086; RP024-222; RP024-322; RP024-522; RP024-523; RP024-524; RP024-525; RP024-527; RP024-529; RP024-532; RP024-534; RP024-536; RP024-537; RP024-538; RP024-539; RP024-540; RP024-542; RP024-680; RP024-681; RP024-682; RP024-683; RP024-684; RP024-689; RP024-690; RP024-691; RP024-692; RP024-693; RP024-694

The commenter requested several revisions to the SEIS text within the sections on Historical, Cultural, and Paleontological Resources. The suggested revisions included justifying the statement that potential impacts to historical and cultural resources would be SMALL to LARGE, changing "eligible properties" to "potentially eligible properties," and clarifying the consultation status and level of interest of certain Tribes. The commenter also recommended clarifying the information regarding the status of the traditional cultural properties (TCPs) survey and existing disturbance within the project area that could adversely effect these sites, and including more information on the possible outcomes of Section 106 consultation and the possible development of mitigation measures to avoid or minimize adverse effects.

Response: *The NRC and the BLM staffs' Section 106 consultation activities for the proposed undertaking have continued since publication of the DSEIS. These activities have required significant revisions to SEIS discussions related to Section 106 consultation activities and historical, cultural, and paleontological resources. Many of these FSEIS revisions occur in sections of the DSEIS that the commenter addressed in its comments. When revising the text*

to reflect the new information obtained through the post-DSEIS Section 106 activities, the NRC staff considered these comments.

Comment: RP024-535

The commenter suggested changing the word "mitigated" to "resolved" to be consistent with Section 106 consultation process.

Response: *"Mitigation," as used in an EIS, means avoidance, minimization (to limit the degree or magnitude of an action), rectification (to repair, rehabilitate, or restore), reduction, or elimination of potential impacts over time; it can also mean compensation. Mitigation with respect of NHPA also means the resolution of specific adverse effects to a historical and/or cultural property. Thus, "mitigation" is the proper word that the NRC intended to use. No changes were made to the SEIS beyond the information presented in this response.*

Comment: RP037-001

The commenter brought to the attention of the NRC staff the concerns and frustrations of its Tribal Historic Preservation Office (THPO). A second letter was attached to the comment letter, one of which was written to the Advisory Council on Historic Properties (ACHP) and which discussed not only the Ross Project, but other ISR projects as well.

Response: *While many of the comments submitted by the commenter were not within the scope of this SEIS, which concerns only the proposed Ross Project, readers are invited to read the letter attached to the comment letter, which was dated March 20, 2013, at ADAMS Accession No. ML13196A371. Moreover, readers can access ACHP's related letter to the NRC of May 3, 2013 (ADAMS Accession No. ML13196A368) as well as NRC's response letter to the ACHP dated August 2, 2013 (ADAMS Accession No. ML13197A139).*

B.5.19.2 Miscellaneous Historic and Cultural Comments

Comment: RP024-316

The commenter stated that the original text in DSEIS Section 3.9 was factually incorrect and does not contribute to an understanding of historical and cultural properties at the Ross Project area.

Response: *The original text in the SEIS makes four relevant points. First, the text refers to the broad categories of property types that may be considered historic properties, including: sites, buildings, structures, districts or objects. Prehistoric archaeological sites considered potentially eligible for the National Register of Historic Places (NRHP) under Criterion D of 36 CFR Part 60.4 occur within the Ross Project area.*

Second, the SEIS text referred to the 1992 Amendments to Section 101 of the NHPA, which explicitly added TCPs as a property type that could be considered eligible for listing on the NRHP. TCP site and district properties eligible for listing on the NRHP under Criterion A do occur within the Ross Project area. Third, the text cited the four NRHP criteria for evaluation cited in 36 CFR Part 60.4; however, two errors occurred in the text: 1) the four criteria should be identified as Criteria "a – d", rather than "1 – 4," and 2) "under Criterion 4(d)," that the DSEIS

text read as "yield or be likely to yield important information." The correct citation for Criterion (d) is, "has yielded or may yield information significant to prehistory or history."

Fourth, the DSEIS text referred to assessements of site integrity as a requirement of the NRHP site-evaluation process. This part of the text is not clear, nor does it contribute to an understanding of historic properties in the Ross Project area. To clarify the information presented in the FSEIS text, the commenter recommended replacing the original text with the following text passage: "Historic properties are resources eligible for or listed on the National Register of Historic Places. To be eligible for listing, resources must exhibit integrity of setting, location, design, materials, feeling and association. Once integrity is established, a resource is evaluated for criteria of eligibility as defined in 36 CFR Part 60.4, of which it must meet at least one criterion. These criteria include: 1) association with significant events in the past, 2) association with the lives of persons significant in the past, 3) embodiments of distinctive characteristics of type, period, or construction, or 4) yield or be likely to yield important information."

The NRC agrees that the text change recommended by the commenter provides increased clarity and is more descriptive of the historic properties in the Ross Project area. However, the incorporation of the important points cited in the DSEIS text is also necessary to provide the most complete picture of the occurrence and significance of potential historic and cultural properties in the Ross Project area. Therefore, a new, combined text passage has been inserted to replace the text in FSEIS Section 3.9.

Comment: RP024-319

The commenter suggested revising "additional shovel tests" in SEIS Section 3.9.2 to include all of the additional work completed by the Applicant.

Response: *The FSEIS has been revised in Section 3.9 to include a description of the additional work completed by the Applicant.*

Comment: RP024-321; RP024-675

The commenter suggested the NRC be consistent in its description of the APE for the Ross Project. The APE was defined in DSEIS Section 3.9 as "…the Ross Project site boundary and its immediate environs, which may be impacted by the Ross Project construction, operation, aquifer restoration, and decommissioning activities." This differed from the description in DSEIS Section 5.12, which stated that the APE "includes the Ross Project's boundaries as well as the area established for potential effects to TCPs."

Response: *The NRC staff agrees and has ensured that its references to the APE, as defined in the first quotation, are consistent in the discussions in FSEIS Sections 3.9 and 5.12.*

B.5.20 Visual and Scenic Resources

B.5.20.1 Light Pollution Concerns

Comment: RP017-012

The commenter expressed concern about the cumulative impacts related to light pollution at the Ross Project, air pollution (including fugitive dust), and visual and scenic impacts, particularly if potential satellite areas in the Lance District (including the proposed Kendrick, Richards, and Barber areas) would be under construction and/or operation in conjunction with the Ross Project area.

Response: *The construction, operation, aquifer restoration and decommissioning of the Lance District (Kendrick, Richards, and Barber areas) would be developed in sequence after the construction of the Ross Project facility (e.g., CPP and the surface impoundments) has been completed and its operation initiated. If other satellite areas were to be developed within the Lance District, then the Applicant would be required to submit to the NRC a license-amendment application. In that application, the Applicant would be required to evaluate light and air pollution as consequences of its expansion in the Lance District.*

SEIS Sections 4.9 and 4.13 consider the cumulative impacts of the Ross Project on local air quality as well as on visual and scenic resources (including light pollution in general). As noted in SEIS Section 4.10.1.1, prior to the actual construction of the Ross Project, monitoring for potential light pollution would be conducted at eight sites around the Project area. Based upon the results of this pre-construction evaluation, a light-pollution monitoring plan would be prepared by the Applicant. This plan would finalize the locations for both continuous and intermittent light sources; in addition, it would provide a schedule for periodic checks on sky brightness during the construction and operation of the Ross Project to ensure worker safety and to measure, and to mitigate if necessary, obtrusive light emanating from the Proposed Action (Strata, 2012a). Please see the NRC staff's responses to Comment Nos. RP035-015 and RP035-042 for further information on the potential cumulative impacts to air quality as a result of the Ross Project, and please refer to the other comments and responses in this Section B.5.20 of Appendix B. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP017-014

The commenter recommended that all mitigation strategies listed in DSEIS Section 4.10.1.1 be extended to include all components of the Ross Project, including the CCP, wellfields, roads, and structures. The commenter also recommended that these mitigation strategies be extended to the operation and aquifer-restoration phases of the Project.

Response: *The NRC staff agrees with the commenter's recommendations. It has revised the text to clarify that the mitigation strategies noted in FSEIS Section 4.10.1.1 would be applied to all components of the Project, including the CPP, wellfields, roads, and structures, and that they would be continued during the operation and aquifer-restoration phases, until the area has been reclaimed and restored.*

Comments: RP017-015; RP017-016; RP039-017; RP042-001

One commenter recommended a few additional actions in order to better address and mitigate artificial lighting. The discussion in the DSEIS focused on the glare of light in the direct vicinity of the CPP. However, the commenter noted that light pollution could also occur from "sky glow," which has broader environmental implications. Sky glow (also known as "artificial sky glow," "light domes," or "fugitive light") is the brightening of the night sky from human-caused light scattered in the atmosphere. This glow can greatly detract from the overall darkness of the night sky and can inhibit people's ability to view celestial objects in the night sky. In a remote and dark environment, impacts can be detected at distances over 160 km [100 mi]. The commenter was pleased that the Applicant would address light pollution by conducting baseline monitoring for potential light pollution at eight sites near the Project area. The commenter indicated support for the Applicant's proposal to prepare a light-pollution monitoring plan and the multiple mitigation measures proposed. The commenter encouraged the highest level of light-pollution mitigation possible, and requested the opportunity to cooperate on the final light-pollution monitoring plan and the mitigation measures to be used at the Ross Project, based upon the information obtained during pre-construction, baseline monitoring. Because the night sky is such a valuable resource at Devils Tower, and to ensure that the resource is protected, the commenter requested the Applicant conduct or sponsor light-pollution and night-sky monitoring at Devils Tower in addition to the proposed eight sites, or in substitution for one or more of the currently proposed sites. The commenter stated that the Applicant or the NRC should contact the commenter to identify optimum monitoring locations and protocols to reflect potential impacts on the night sky and the visitor experience. Two other commenters recommended adequately minimizing light pollution and other industrial impacts to landowners in the Oshoto area and to Devils Tower.

Response: *The first commenter's suggestions will be available for review by the Applicant in the FSEIS. As noted in SEIS Section 4.10.1, the respective impact analysis yielded the result that the visual and scenic impacts of the Ross Project would be SMALL throughout its lifecycle. Moreover, as outlined in SEIS Section 4.10.1.1, the Applicant would mitigate light-pollution impacts by designing lighting plans with an emphasis on the minimum lighting requirements for operation, safety, and security purposes; using light sources of minimum intensity (as measured in lumens) necessary to accomplish the light's purpose; specifying lighting fixtures that direct light only where it is needed (i.e., shine down, not out or up) in conjunction with shielding that further directs the light towards the respective work area; turning lights off when not needed at proposed intermittent light locations either manually, with timers, or occupancy sensors; adjusting the type of lights used so that the light waves emitted are those that are less likely to cause light-pollution problems such as those attendant with high-pressure sodium lamps; fitting building windows with shutters, where appropriate, to block light emissions, including the CPP and other buildings; using natural and/or in situ screens to reduce perceptible light (i.e., locating buildings and other facility components to take advantage of the natural topography and any trees; and evaluating the results of the light-pollution monitoring to ensure that, as necessary, the mitigation measures suggested previously have been implemented successfully (Strata, 2012a). No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP017-024

The commenter noted that, while the light- and noise-pollution impacts of the Ross Project were discussed in the DSEIS with respect to nearby residences, Devils Tower is also sensitive to the effects of anthropogenic light and noise and should be included in the analysis.

Response: *Visual impacts to receptors at Devils Tower are discussed in FSEIS Section 4.10.1.1. The NRC staff has added supplemental text to the FSEIS in Sections 4.8, Noise, and 4.10, Visual and Scenic Resources, to further describe the impacts of anthropogenic light and noise at Devils Tower.*

B.5.20.2 Visual Impacts

Comment: RP017-017

The commenter noted that daytime visual impacts are a concern for Devils Tower. The main feature of the Monument is the 264-m [867-ft] rock monolith, Devils Tower. The rock formation is sacred to many Native American tribes and climbed by 5,000 to 6,000 rock climbers a year.

Response: *Daytime visual impacts are discussed in SEIS Section 4.10.1. Mitigation to reduce daytime visual impacts can be found in SEIS Section 4.10.1.1. The fact that the Tower is sacred to many Native American tribes is discussed in SEIS Section 3.9.1.2. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP017-019; RP024-547

One commenter stated that the viewshed-impact analysis in the DSEIS with respect to Devils Tower shows that visitors at ground level would not be able to see the CPP. However, the commenter noted that climbers on Devils Tower would be able to see the CPP and that there may impact to the visitor experience to climbers since few structures are visible from the Tower. Another commenter noted that pictures were taken by the NPS with a telephoto lens from the top of Devils Tower in September 2011 (see ADAMS Acession No. ML11320A307). The Devils Tower viewshed analysis concluded that the Ross Project would not be visible from the base of Devils Tower or from the Visitor's Center, but that the Project area could be visible to climbers scaling the Tower.

Response: *The NRC staff does not use photos taken with a telephoto lens in its visual-impact analyses. The NRC staff evaluates visual impacts from the perspective of the human eye. Text in FSEIS Section 4.10.1.1 has been revised to clarify that it is unlikely that the Ross Project area could be visible to climbers scaling the tower due to the distance between the Project area and the Tower.*

Comment: RP017-020

The commenter indicated support for the multiple visual-impact mitigation measures proposed by the Applicant, including painting some of the infrastructure to match the surrounding environment, planting trees, and using the local topography and landscape to create a visual buffer. The commenter added that impacts to visual and scenic resources during Project operation are considered "SMALL" (i.e., not detectable) in the SEIS. However, given that climbers may be able to see the CPP and lights from the summit of Devils Tower, unless mitigated, the commenter indicated that those impacts would be "MODERATE" (i.e., sufficient to alter noticeably).

Response: *The NRC has determined that, with the mitigation measures committed to by the Applicant, as detailed in SEIS Section 4.10.1.1, the impacts to visual and scenic resources in the APE as a result of the CPP's presence and its lighting during all of the Ross Project's*

phases would be SMALL. In particular, given the BLM's management class of the Ross Project area, even nearby observers would experience only SMALL impacts, although the four nearest residences to the Project could experience SMALL to MODERATE impacts during the construction phase but these impacts would lessen during the operation phase of the Project to SMALL. During the day, climbers at the top of Devils Tower would not be able to see the Project, even the CPP, due to the camouflaging efforts committed to by the Applicant (e.g., paint colors); conversely, during the dark of night, such climbers might be able to see the lights of the Project. However, no climbing is permitted after dark at Devils Tower. No changes were made to the SEIS beyond the information presented in this response.

Comment: RP024-545

The commenter noted the statement in DSEIS Section 4.10 that, "The Applicant would mitigate visual and scenic impacts related to fugitive dust by wetting the soil and using chemical dust suppressants, as necessary, when clearing and grading activities are underway as well as by establishing diminished speed limits for vehicle traffic…." The commenter suggested revising the statement to: "[The Applicant's] using chemical dust suppressants, as necessary, when clearing and grading activities are underway and on roads as well as…."

Response: *The NRC staff agrees that the subject statement could be stated more clearly. The NRC staff notes, however, a number of management practices the Applicant could exercise to suppress fugitive dust are presented in detail in SEIS Section 4.7. The statement has been revised per the commenter's suggestion in FSEIS Section 4.10.*

Comment: RP039-012

The commenter requested that the FSEIS fully discuss the visual quality of the area, impacts, and mitigation.

Response: *The visual and scenic resources in the Ross Project area, which are discussed in SEIS Section 3.10; the impacts to visual and scenic resources from the three proposed alternatives, which are discussed in SEIS Section 4.10; and the cumulative impacts related to Project-area visual and scenic resources, which are described in SEIS Section 5.13, are fully described and discussed in the SEIS. Further, the mitigation measures for visual and scenic resources impacts are described in SEIS Section 4.10.1. No changes were made to the SEIS beyond the information provided in this response.*

B.5.20.3 References

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

B.5.21 Socioeconomics

Comment: RP016-007

The commenter stated that the anticipated one-percent increase in the demand for health and social services as a result of an anticipated one-percent increase in local population well under-represented the true impact on local emergency services.

Response: *Increases in the demand for health and social services based upon increases in the local-area population are consistent with standard planning practices for these types of services. As noted in SEIS Section 4.11.1.1, accident rates (and the ensuing need for emergency services) are not expected to be different than those of other types of similar industrial facilities. The Applicant has represented itself to be committed to maintaining emergency-response personnel on staff and would train local emergency responders in preparing and responding to potential emergencies. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP016-008

The commenter noted that the increase in the workforce, distance of travel on two-lane gravel roads, extreme drought conditions in the region, and the amount of drill-rig activity and construction work in vegetated areas, would all make the potential for accidents and fires extremely high compared to the current state of the community prior to the Applicant's uranium-recovery operation. Since Crook County is staffed entirely by all-volunteer firefighters, the commenter proposed that the Applicant be required to have trained emergency-response personnel on staff, to work with local responders on preparing and responding to potential environmental, safety, and health emergencies, and to be required to have a firefighting unit available and staff trained to respond at all times.

Response: *The NRC's Ross Project SER, Section 7.3.6, determined that the Project-related fire hazard would be minimal and that the Applicant's commitments to further reduce the risk would make an onsite firefighting unit unnecessary. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-331

The commenter suggested revising SEIS Section 3.11.2 so that it would discuss median household income, which would be similar to previous SEISs completed for the Moore Ranch and Nichols Ranch Projects.

Response: *The purpose of the SEIS's providing a per-capita-personal-income measure, rather than a median household-income measure, was so that the total personal-income value was easily calculated for the region of influence (ROI), based upon population levels. The total personal-income value is the metric against which Project changes were measured regardless of whether a per-capita measure or a household measure were to be used. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-696

The commenter requested clarification on the sources the NRC staff used to evaluate the cumulative impacts for employment and population increases. For example, the commenter noted that the SEIS stated that "2,080 jobs" would be created if the other potential uranium-recovery projects in the 80-km [50-mi] area were at peak construction employment concurrently with the Ross Project. However, the commenter noted that, as indicated in SEIS Section 4.11, the Ross Project would employ 200 people during construction and an additional 140 indirect jobs could be generated. Therefore, the commenter stated that during construction the Ross Project and four other potential uranium-recovery projects could create "1,000 jobs" with the potential for an additional "700 indirect jobs." Similarly, the commenter noted that the SEIS stated that "the additional operation-phase population would increase the projected six-county population in 2027 to 24,348 residents." However, as the commenter noted, SEIS Section 4.11 stated that the employment base in the ROI (Crook and Campbell counties) was approximately 28,000 workers.

Response: *The 2,080 construction-worker estimate reflected not only uranium-recovery projects within 80 km [50 mi] of the Ross Project area, but it also included other uranium-recovery projects within the six-county region composed of Crook, Campbell, Weston, Sheridan, Johnson, and Converse Counties. This area is consistent with the geographic scope of the BLM's* Report for the Powder River Basin Coal Review Cumulative Social and Economic Effects *and is also consistent with the rest of the socioeconomics cumulative-impact analysis.*

The other, similar projects include the potential Aladdin, Elkhorn, Hauber, and Alzada uranium-recovery projects; the Smith Ranch, Willow Creek, Nichols Ranch, Moore Ranch, and Reno Creek uranium-recovery projects; the Ross Project itself; and the workforce associated with wellfield construction at the satellite areas of Ross Amendment Area 1, Kendrick, Richards, and Barber. The NRC staff assumed that the construction of the potential satellite areas would require 20 workers at each location, and approximately 200 workers at each of the other projects; thus, the peak construction workforce would total 2,080 workers. There is an error in SEIS Section 5.14 in reference to these projects all located within 80 km [50 mi] of the Ross Project. The NRC has corrected the SEIS text in Section 5.14 to reflect the impacts were assessed over the six-County region, rather than within 80 km [50 mi] of the Ross Project.

Comment: RP032-062

The commenter noted that the SEIS, in its discussion of the eliminated alternative of conventional mining and milling to extract uranium at the Ross Project, stated that "the uranium ore in the Lance District is low-grade and located at nearly the maximum depth for surface mining to practically recover uranium from an open pit." The commenter asked that the NRC define "low-grade." The commenter also asked that the NRC provide an analysis to show that the environmental impacts of developing the uranium within the Lance District is worth the socioeconomic benefits in light of the alternative to mine from other locations. Specifically, the commenter noted that mining uranium from the Athabasca Basin would cause significantly fewer environmental impacts per ton of U_30_8 product extracted. The commenter also asked if the Applicant's mining the potential satellites within the Lance District could threaten the future use of wells in the area as a source of drinking water.

Response: *Uranium ore is defined as "low-grade" when it contains a small percentage (e.g., 0.01 to 0.25 percent) of uranium oxides. SEIS Section 7, "Cost-Benefit Analysis," provides an*

examination of the costs and benefits of the Proposed Action and the Alternatives. The discussion of costs and benefits followed the NRC guidance presented in NUREG–1748 (NRC, 2003b). NRC guidance does not provide for the NRC's evaluation of the costs and benefits of the Proposed Action against those of an eliminated alternative (e.g., an operator's use of conventional mining to recover uranium from another location). This SEIS has been prepared to evaluate the environmental impacts of the NRC's decision to either grant or deny a license to construct and operate a uranium-recovery facility and wellfields at the proposed Ross Project area. If the Ross Project were to be licensed and Strata were to submit an application to amend its Source and Byproduct Materials License to include one or more of the potential satellite areas, the NRC would prepare a NEPA document at that time to evaluate the environmental impacts of granting or denying the license amendment. That NEPA document would include an analysis of impacts to water resources, at that time. No changes were made to the SEIS beyond in the information in this response.

Comment: RP041-016

The commenter stated that Federal uranium would be mined under the "1872 General Mining Law" at the Ross Project and its potential satellite areas, but the SEIS did not disclose the lack of royalties related to the production of Federal minerals. Therefore, the commenter asked that the FSEIS disclose that the mining of Federal uranium reserves would not produce royalties to federal or state governments.

Response: *The discussion of royalty payments in the SEIS referred only to Wyoming royalties, which are authorized by State statute. All royalty revenues in the SEIS referred to these state-authorized royalties. No changes were made to the SEIS beyond in the information in this response.*

B.5.21.1 References

(US)NRC (Nuclear Regulatory Commission). "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." NUREG–1748. Washington, DC: USNRC. 2003b. ADAMS Accession No. ML032450279.

(US)NRC. "Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming, Materials License No. SUA-1601, Docket No. 040-09091, Strata Energy, Inc." Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

B.5.22 Public and Occupational Health

B.5.22.1 Impacts to Members of the General Public

Comment: RP003-004

The commenter expressed concern regarding historical mining operations (including a mine in Colorado) that involved radioactive materials and stated that these operations caused unexplained illness and mortality to individuals as well as left the properties in that area with no

value. The commenter also feared that there would be contamination that occurs as a result of the Ross Project.

Response: *In its role as a regulatory agency, the NRC regulates the radiological aspects of uranium-related projects to ensure public and occupational health and safety as well as the protection of the environment. As part of its licensing process, and to ensure public and occupational health and safety, the NRC's SER includes an analysis of the Applicant's proposed compliance with the applicable requirements and objectives set forth in 10 CFR Parts 20, "Standards for Protection Against Radiation," and 40, "Domestic Licensing of Source Material," in addition to 10 CFR Part 40, Appendix A, "Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for their Source Material Content" (NRC, 2014a). No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP035-018

The commenter noted that the DSEIS references a document containing information on the estimated radon released from the proposed facility, but that the estimate is not included in the DSEIS. The commenter recommended that the FSEIS include this radon-release estimate so that the public and decision makers can clearly understand whether there is a potential radon impact to public health.

Response: *The commenter does not provide a citation for the DSEIS section where the "document" is referenced. However, it appears that commenter was referring to SEIS Section 4.13.1.2, which discussed the impacts of a radon release due to pregnant-lixiviant and loaded-resin releases. The document referenced in this SEIS Section is the GEIS (NRC, 2009b), which references NUREG/CR-6733 (Mackin, 2001). NUREG/CR-6733, Table 4-5, indicated that the assumed activity concentration of radon used for the pregnant-lixiviant and loaded-resin spill scenarios was 3.0 x 10^4 Bq/L [8.00 x 10^5 pCi/L]. This activity concentration was provided in Section 4.13.1.2 of the DSEIS along with the estimated resulting radiation dose to a worker of 0.0013 Sv [1,300 mrem] and dose to a member of the public of less than 1 mSv [100 mrem]. No changes were made to the SEIS beyond the information provided in this response.*

B.5.22.2 Impacts to Occupational Workers

Comment: RP024-354

The commenter requested clarification on the radiation-exposure ranges and units presented in Table 3.21 of the DSEIS. The commenter indicated that these values seemed erroneously high.

Response: *The units of radiation exposure measured by the thermo-luminescent dosimeters (TLDs) during pre-licensing, site-characterization environmental studies of the Applicant were incorrectly listed in the DSEIS. Table 3.21 has been corrected in the FSEIS.*

Comments: RP032-034

The commenter asked where the off-gases generated in the yellowcake dryer would be vented and what constituents would be contained in these off gases. The commenter also asked if there would be an incremental risk to workers or the public as a result of the Ross Project.

Response: *The off-gases from the yellowcake dryer, including particulates, were reviewed by the NRC in its SER (NRC, 2014a). All such releases, which would exit the CPP from a stack only after gas filtration and scrubbing, have been determined to be ALARA. Please refer to the NRC's SER for further information. No changes were made to the SEIS beyond the information provided in this response.*

B.5.22.3 References

Mackin, P.C., D. Daruwalla, J. Winterle, M. Smith, and D.A. Pickett. "A Baseline Risk-Informed Performance-Based Approach for In Situ Leach Uranium Extraction Licensees." NUREG/CR–6733. Washington, DC: USNRC. September 2001. ADAMS Accession No. ML011860093.

(US)NRC. "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." NUREG–1748. Washington, DC: USNRC. 2003b. ADAMS Accession No. ML032450279.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming." Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

B.5.23 Waste Management

B.5.23.1 Waste Treatment and Disposal Methods

Comments: RP017-011; RP032-055

One commenter noted the statement in DSEIS Section 2.1.1.5, "WDEQ has approved a UIC Class I Permit for up to five wells to be installed in the Deadwood and Flathead Formations (Permit No. 10-263) (WDEQ/WQD, 2011b). The applicant expects the capacity of each of the five Class I wells to range between 132.5 – 302.8 L/min [35 – 80 gal/min]." A commenter noted that the capacity of a disposal well is expressed as a flow-rate, not as a limit on the total amount of liquid wastes injected and asked the following questions: 1) What determines the actual amount of liquid waste that each deep-disposal well can accommodate, and how is this limit expressed; 2) Is there a limitation imposed on the maximum injection pressure, or on the resulting water pressure in the deep formation that is receiving the waste, and what is this limit for the Ross Project and for potential projects developed in the Lance District; and 3) Would all deep-disposal wells associated with uranium yellowcake produced pursuant to the proposed license be targeted in the same formations (Deadwood and Flathead) as targeted by the five deep-disposal wells permitted for the "Ross Project?" In addition, a commenter requested that the total estimated volume of liquid for deep-well injection that would be disposed in the Class I UIC wells be included in the SEIS.

Response: *The UIC Class I wells proposed by the Applicant and the corresponding UIC Permit for these wells that the Applicant has received from WDEQ/WQD are discussed in FSEIS Sections 2.1.1.5 and 4.5.1.2. The UIC Class I Permit limits the pressure rather than volume of liquid disposed in the disposal wells. The Permit sets a maximum limit on the injection pressure*

(2,570 psi) and sets a range for the annulus pressure (200 – 800 psi). Injection at pressures less than the injection limit ensures that the capacity of the target aquifer (Deadwood and Flathead Formations) is not exceeded. The UIC Permit requires that the pressures as well as injection rate and volume are monitored and submitted to the WDEQ. In addition, the UIC Permit requires pressure fall-off tests to be conducted; these tests will provide data so that the Applicant can calculate aquifer properties to determine safe pressures. It is likely that any other UIC Class I wells in the Lance District would also target the Deadwood and Flathead Formations because the geology is the same throughout the Lance District. The pressure limitations and the testing and monitoring requirements set by the UIC Class I Permit has been added to the FSEIS in Section 2.1.1.5 as a result of this comment. As described in Section 4.5.1 and 4.14.1, the estimated rates of disposal of liquid in the UIC Class wells are given in Figures 4.2, 4.3, and 4.4 and Table 4.10 in the FSEIS. The rate of liquid disposed in the wells ranges from 0.2 m^3/min [62 gal/min] during operations without concurrent restoration to 0.9 m^3/min [227 gal/min] during operations with concurrent restoration. The total volume of liquid disposed in the wells would be determined by the estimated rates of disposal multiplied by the duration of the project activities.

Comment: RP024-205

The commenter indicated that byproduct material would not be generated during the construction phase of the Ross Project. During the other phases of the Project's lifecycle, when byproduct material would be generated, such material would be stored onsite in a designated area and then shipped offsite for disposal.

Response: *The NRC staff acknowledges that the commenter is correct, and SEIS Section 2.1.1.5 has been revised accordingly as a result of this comment.*

Comments: RP024-401; RP024-402

The commenter noted lack of clarity regarding the environmental impacts to aquifers that would be used for deep-well injection.

Response: *The NRC staff has revised the text in SEIS Section 4.4.1.3, which now indicates that aquifer restoration would not result in the removal of any of the rock matrix or structure of the OZ; therefore, no significant matrix compression or ground subsidence would be expected as a result of deep-well injection of waste fluids.*

Comment: RP024-431

The commenter agreed with the conclusion described in SEIS Section 4.5.1.2, that the potential impacts to ground-water quality of the shallow aquifer would be SMALL. However, the commenter suggested that the conclusion could be strengthened by the NRC's including a discussion of the Applicant's commitment to install additional shallow aquifer wells and to monitor them on a quarterly basis, as indicated by License Condition 11.5 of the Draft Source and Byproduct Materials License.

Response: *The NRC staff has revised the text in FSEIS Section 4.5.1.2 to include a reference to the Applicant's additional shallow aquifer well installation and ground-water monitoring implementation.*

Comment: RP024-569

The commenter highlighted that the Applicant's executed agreement(s) with a byproduct material disposal facility would be required prior to the commencement of uranium recovery operation, not prior to the NRC's licensing of the Ross Project.

Response: *The commenter is correct; the Applicant must submit to the NRC fully executed agreement(s) with the disposal facilities to which it would convey Ross Project byproduct material prior to uranium recovery activities commencing. The text in FSEIS Sections 2.1.1.5 and 4.14.1 has been revised to clarify this requirement.*

Comment: RP032-021

The commenter stated that, in addition to the information provided in Figure 2.4 of the DSEIS, the SEIS should include a supplemental map indicating the number, the locations, and the required capacities of all UIC Class I deep-disposal wells and the corresponding target aquifer(s) that would be required in the event that the potential satellite areas in the Lance District are developed (as shown in DSEIS Figure 2.6.) In addition, the commenter asked that any currently planned and reasonably foreseeable uranium recovery operations in the Lance District that are not reflected in Figure 2.6 be included on the supplemental map. The commenter also requested that the FSEIS include another map(s) indicating the number of proposed locations and corresponding capacities of all UIC Class I deep-disposal wells and the respective target aquifer(s) that would be used by the Applicant to dispose of wastes generated during the operation of the Ross Project CPP over its entire reasonably foreseeable lifetime. The commenter requested that a scientifically and technically adequate discussion of the cumulative environmental impacts of uranium recovery waste disposed via deep well injection be included in the FSEIS. Finally, the commenter requested that the FSEIS include all the information related to Applicant's UIC Class I Permit No. 10-263, dated April 4, 2011, that was requested in the scoping comments letter submitted to the NRC by the EPA, Region 8 (EPA, 2011).

Response: *Figure 2.4, which is found in FSEIS Section 2.1.1.1, provides a map indicating the locations of the five UIC Class I deep-disposal wells proposed by the Applicant for the Ross Project, which have already been permitted by the WDEQ/WQD (WDEQ/WQD, 2013). The NRC staff contacted the WDEQ to obtain information regarding the status of any permit applications that might have been submitted by the Applicant for additional UIC Class I wells within the Lance District. No such permit applications have been submitted to the WDEQ. Therefore, the NRC staff cannot include in this SEIS a map of the locations or the number of these wells. However, FSEIS Section 5.17.1 does provide an analysis of the cumulative impacts of liquid waste disposal via the five UIC Class I wells. This analysis considers the disposal of liquid waste in wells that could be developed for future projects near the proposed Ross Project and estimates the total number of wells that would be developed.*

The scoping comments submitted by the EPA via a letter dated December 29, 2011 (EPA, 2011), were considered during the development of the DSEIS, and the information requested by the commenter to be included is provided throughout the FSEIS. For example, in the FSEIS Sections 2.1.1.5 and 4.5.1.2, a description of the Class I Permit (UIC Class I Permit No. 10-263) is provided, including the number and locations of the wells permitted by the WDEQ, the permitted injection geologic formation, the pressure limitations, and the monitoring requirements associated with the UIC Permit. In addition, FSEIS Section 3.4.1.2. provides data on the depths

of the formations targeted by the Class I wells, the thickness of the rock between them, and USDW above the Class I wells. Similar information on UIC Class I Permit for the deep-disposal wells is provided in the NRC's response to Comment Nos. 017-011 and RP032-055. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-023

The commenter referred to the statements in DSEIS Section 2.1.1.1 that describe the construction of the deep-disposal wells: "The Applicant proposes that each well location would consist of a 76 m x 76 m [250 ft x 250 ft] pad with a storage tank (Strata, 2011b; Strata, 2012b). Surface equipment for the deep-disposal wells would include storage tanks, pumps, filtration systems, instrumentation and control systems, and equipment for injection of process chemicals (Strata, 2011b)." Based upon these statements the commenter noted that 76 m x 76 m [250 ft x 250 ft] is equivalent to an area of 0.58 ha [1.43 ac] and the UIC Class I Permit for the Ross Project would allow up to five deep-disposal wells, so that approximately 3 ha [7 ac] (not including associated service roads and pipelines) of the Ross Project would be industrialized by the construction and operation of the deep-disposal wells. Based upon that area and nature of the disturbance, the commenter submitted several questions:

1) Were the land use impacts of the maximum number of deep-disposal wells at the Ross Project, and any planned and reasonably foreseeable disposal wells required for the development of the Lance District, included in the DSEIS's estimate of land area disturbed by uranium recovery activities?

2) How and when would the concrete or gravel pads surrounding the deep-disposal wells be reclaimed?

3) What would be the licensed disposal capacity of liquid wastes for each UIC-permitted Class I well, and what would be the total licensed disposal capacity of the five permitted wells mentioned in the SEIS for the Ross Project?

4) If five such deep-disposal wells have been permitted for wastes generated at the Ross Project, how many additional deep-disposal wells, with what disposal capacities, targeting which formations, would be required in connection with processing of pregnant lixiviant and/or loaded resin from the following potential satellite areas that would utilize the Ross Project's CPP: the Ross Amendment Area 1, Kendrick, Richards, and Barber satellite areas?

5) Please provide a table containing the above information, and when construction, operation, and abandonment of each disposal well would be planned or could reasonably be expected to occur.

6) Please provide a map showing the planned or reasonably foreseeable locations of the disposal wells described in 4) and 5) above.

7) How many additional deep-disposal wells, targeting which formations, at which locations, would be required to dispose of the wastes from processing loaded resin from the following potential uranium recovery projects within 80 km [50 mi] of the Ross Project's CPP: the Aladdin, Elkhorn, Hauber, and Alzada projects?

Response:

1) The land use impacts of the area disturbed by the maximum number of deep-disposal wells at the Ross Project are presented in Section 4.2.1.1 and in Table 4.1 of the FSEIS. The impacts are generally the same as those for all other disturbed portions of the Ross Project area. However, as a result of this comment, the NRC staff has corrected the area calculations of the 76 m x 76 m [250 ft x 250 ft] pads that would be constructed at the site of each deep-disposal well. Changes have been made in Table 4.1 in the FSEIS as follows: The "Area Impacted by Proposed Action" at "Deep-Injection Wells" has been changed from 2 ha [5 ac] to 3 ha [7 ac]; the "Total Area Impacted in the Year Preceding Proposed Action Operation" at "Deep-Injection Wells" has been changed from ~113 ha [280 ac] to ~114 ha [282 ac]. The correction of the area impacted by the pads at the sites of five deep-disposal wells has been updated throughout the FSEIS and in the response to Comment No. RP032-079.

2) Section 2.1.1.4 of the FSEIS describes the abandonment of the UIC Class I deep-disposal wells that would be accomplished according to the DP that would be prepared by the Applicant and approved by the NRC, as indicated in the Draft Source and Byproduct Materials License Condition No. 10.3 (NRC, 2014b). In the license application, the Applicant represented that surface disturbance associated with deep-disposal well infrastructure would remain for the life of the Ross Project (Strata. 2011b). DSEIS Section 2.1.1.4 reiterated the commitment by the Applicant that, at the completion of decommissioning, the entire Project area would be reclaimed and restored for unrestricted use. Section 2.1.1.4 of the FSEIS has been modified by the NRC staff to add the pads associated with the deep-disposal wells to the list of features that would be surveyed for radioactive contamination by the Applicant during decommissioning activities, then disposed of appropriately or released for unrestricted use.

3) As discussed in the NRC staff's responses to Comment Nos. RP017-011 and RP032-055, the liquids injected into deep-disposal wells would be limited on the basis of pressure, rather than volume. These comments also asked for information regarding the permitted disposal capacity of the deep-disposal wells; the reader is referred to the license application for a UIC Class I Permit included as Addendum 2.4-A in the Technical Report (Strata, 2011b) and the UIC Class I Permit issued to the Applicant by the WDEQ/WQD, (WDEQ/WQD, 2011b). No changes were made to the SEIS beyond the information provided in this response.

4) The application for the UIC Permit for Class I deep-disposal wells at the Ross Project specifies that the five wells could be installed to serve the uranium recovery facility (i.e., CPP) for the life of the Project (Strata, 2011b). In addition, the Applicant performed computer modeling for a 20-year lifecycle for the deep-disposal wells to determine the maximum required capacity (Strata, 2011b). The model was based upon the assumption that the Ross Project CPP would process uranium from the other potential satellite areas within the Lance District discussed in the FSEIS that are identified by the commenter. It was anticipated that the five deep-disposal wells currently permitted for the Project would be sufficient; however, as noted in Section 5.17.1.1 of the FSEIS, if a remote IX-only facility were to be constructed within the Lance District, an additional deep-disposal well may be located at a satellite project.

5) and 6) As discussed in 4) above, it has been anticipated that the five currently permitted UIC Class I deep-disposal wells would serve the waste management needs of the Project throughout its lifecycle. The Applicant's UIC Class I Permit from WDEQ/WQD, identified above, is summarized in FSEIS Section 2.1.1.4, which includes information on the depths and targeted formations. The UIC Permit does not specify the locations of the deep-disposal wells beyond

the section of land designated for each well; construction of the five deep-disposal wells are permitted within Sections 13, 18, and 19, which covers most of the Project area. Figure 2.4 in the FSEIS depicts the approximate locations anticipated by the Applicant for the UIC Class I wells. If additional deep-disposal wells within the Lance District were to be proposed by the Applicant, a permit application would be required to be submitted to the WDEQ/WQD and then a permit issued.

7) Section 5.17.1.1 of the FSEIS presents the assumptions used by the NRC staff in its analysis of cumulative impacts of multiple UIC Class I wells at each of the potential uranium recovery projects identified in the SEIS, within 80 km [50 mi] of the Ross Project. The analysis projected that three Class I UIC wells would be needed for each future project potentially developed outside of the Lance District. Based upon available information, as presented in SEIS Section 5.2.1.1, the uranium reserves at these projects appear to be much less than in the areas of potential Lance District projects, which, as noted above, would require five deep-disposal wells. Therefore, three UIC Class I wells for each of the other potential projects represents a reasonable, but conservative, estimate.

Comment: RP032-056

The commenter noted a statement in DSEIS Section 2.1.1.5, “Net annual evaporation of brine in the surface impoundments would be 5.3 L/min-ac [1.4 gal/min-ac] which would reduce the volume of brine injected in the disposal wells (Strata, 2011b).” The commenter asked that the NRC staff provide the total quantity and percentage of total produced brine that would be disposed via evaporation, and the amounts of radon or other hazardous gases that might be released via evaporation from the surface impoundments.

Response: *The evaporation of brine stored in the surface impoundments is described in the FSEIS Section 4.14.1 and Table 4.10. In response to Comment No. RP035-006, Table 4.10 has been revised to clarify the amounts of brine estimated to be lost by evaporation during the three periods of the operation and aquifer restoration: operation only, operation concurrent with restoration, and restoration only. See the response to Comment No. RP035-012 for a discussion of the emission of radon from the surface impoundments. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-063

The commenter referenced the statement in SEIS Section 2.2.3, "The Applicant has estimated that the 2.5 ha [6.3 ac] available for evaporation in the Proposed Action would provide 33 L/min [8.8 gal/min] of average annual evaporation. Linear extrapolation suggests that 65 ha [160 ac] is the minimum surface area required for evaporation of all brine and other byproduct waste generated at the CPP." The commenter asked: a) how was the proposed surface area of 6.3 acres for the CPP surface impoundments determined; b) why was not a larger or smaller acreage proposed; and c) what environmental and operational factors were considered.

Response: *FSEIS Section* 2.2.3 *assesses evaporation as an alternative method for disposal of liquid byproduct material. In the Proposed Action, the surface impoundments would be constructed for management of brine and liquid byproduct material with only incidental evaporation. The size of the impoundments was determined by the Applicant as part of its proposed design. In response to Comment No. 035-006, an error in the DSEIS was recognized, and the size of the impoundments proposed at the Ross Project has been revised in the FSEIS*

to 4.0 ha [9.9 ac], which is the area of the liquid when the impoundments are at their full operating capacity (Strata, 2011b). As an alternative, if all liquid disposal was achieved by evaporation rather than deep-well injection, the Applicant estimated that an area of surface impoundments required for evaporation of all byproduct liquid material plus an operational reserve capacity would exceed 80 ha [200 ac] (Strata, 2011a). Because 80 ha [200 ac] was determined to be the required size of surface impoundments for managing brine disposal completely by evaporation, smaller or larger areas were not considered as additional alternatives. Environmental and operational factors other than size that affect the rate of evaporation are described in the subsequent paragraph in FSEIS Section 2.2.3. No changes were made to the SEIS beyond the information provided in this response.

Comments: RP035-004; RP035-039

The commenter recommended that, given the relatively shallow ground water in the Ross Project area and the potential for contaminants to migrate into the ground water, more protective waste management options should be considered for drilling wastes (e.g., muds and other fluids) than unlined mud pits (e.g., storage tanks and reuse of fluids for drilling). The commenter also stated that, although the drilling fluids and muds are managed under a temporary WYPDES permit, it is important that the FSEIS describe the potential for environmental impacts associated with these wastes, including the level of radioactivity and metals in the drilling fluids and mud.

Response: *As stated in Section 4.13.1.1.2.2 of the Applicant's license application, drilling for ore-body exploration and delineation, site characterization, and uranium recovery operation at the Ross Project generates drilling fluids and muds (Strata, 2011a). These wastes are classified as TENORM; they are defined by EPA as "[n]aturally occurring radioactive materials that have been concentrated or exposed to the accessible environment as a result of human activities such as manufacturing, mineral extraction, or water processing" (EPA, 2008). Drilling wastes have been and would be collected and disposed of by the Applicant in onsite excavated pits, or mud pits, that are dug for this specific purpose pursuant to the various EPA regulations governing TENORM, such as those in 40 CFR Part 192. (These pits have been excavated and used during the Applicant's preconstruction activities, which do not require an NRC license.) The pits would be allowed to evaporate and dry, and then the dried pits are reclaimed according to WDEQ/LQD requirements, usually within one construction season. WDEQ has extensive experience in managing potential impacts from mud pits as they are a standard component of exploration for natural resources and this experience would be reflected in the requirements included in the Permit to Mine. TENORM ground water produced during pre-operational activities would be discharged under a temporary WYPDES permit as discussed in the NRC staff's responses to Comment Nos. RP032-058 and RP024-419.*

The NRC staff, in its SER, discussed the potential human health and environmental considerations associated with the mud pits (NRC, 2014a). SER Section 4.2.3.1 states:

> TENORM liquid waste includes drilling fluid and 'native' ground water generated during construction and development of monitoring, recovery and injection wells, and ground water generated during sample collection and aquifer testing of wells. The staff finds that the types of liquid wastes as identified by the Applicant for the Ross Project are consistent with staff's experience at operating ISR facilities. Furthermore, because effluent control systems at those facilities for those types of liquid wastes have been shown to be protective of human health

> and the environment, staff has reasonable assurance that the Applicant will design, construct, and operate similarly effective systems. Therefore, the Applicant's descriptions meet acceptance Criterion (1) of Section 4.2.3 and Criterion (13) of Section 6.1.3 of the Standard Review Plan.

In addition, SEIS Section 4.5.1.1, Ground Water, Shallow Aquifers, *provided the NRC staff's analysis of water quality impacts to the shallow aquifer due to drilling fluids. As noted in the last paragraph of that SEIS section:*

> Potential water quality impacts to the shallow aquifer that could occur during construction include spills or leaks from construction equipment and the introduction of drilling fluids. The potential for the shallow ground water to be impacted by drilling fluids and muds is minimal because of the small volume of fluids used, and because the fluids would be contained within a mud pit in accordance with WDEQ/LQD and EPA requirements. Impacts to ground water during well drilling would be further limited by the nature of the bentonite or polymer-based drilling additives in the drilling fluids. These additives are designed to limit infiltration in an aquifer (i.e., to a few inches) and to isolate the drillhole from the surrounding geologic materials via a wall-cake or veneer of drilling fluid filtrate, further diminishing the potential for impacts. Thus, the potential impacts of the Proposed Action's construction to ground-water quality in the shallow aquifers would be SMALL.

No changes were made to the SEIS beyond the information provided in this response.

Comment: RP036-003

The commenter noted that the Proposed Action includes two, double-lined surface impoundments, or "retention ponds" as the commenter identified them, that would encompass a total area of 6.5 ha [16 ac] and would be used to manage liquid waste water in the Ross Project area, and that Section 2.1.1.1 of the DSEIS described the size of the impoundments as approximately twice the upper range of typical surface impoundment sizes described in the GEIS. The commenter requested an explanation of the need for impoundments that exceed the size of typical impoundments for this type of operation.

Response: *The commenter identified an error in the SEIS that has been corrected. The size of typical impoundments described in the GEIS, which range from 0.04 to 2.5 ha [0.1 to 6.2 ac], are for individual impoundments. Facilities may have multiple impoundments. As stated in DSEIS Section 2.1.1.1, the entire area of the impoundments at the Ross Project area would be approximately 6.5 ha [16 ac]. The design would include two individual impoundments. The surface area of the waste water that would be contained in the two impoundments when they are filled to maximum capacity would be 1.3 ha [3.3 ac] and 4.0 ha [9.9 ac] (Strata, 2011b). The average size of the two impoundments proposed for the Ross Project is consistent with the upper range of the typical impoundments described in the GEIS. The text has been revised in the FSEIS Section 2.1.1.1 as well as Table 8.1 in the FSEIS to correct the error.*

B.5.23.2 Regulation of Wastes and Disposal Methods

Comment: RP024-570

The commenter suggested revising "NRC-Regulated Wastes" and "Non-NRC-Regulated Wastes" throughout the SEIS to "AEA-Regulated Wastes" and "Non-AEA-Regulated Wastes," respectively.

Response: *The NRC only has jurisdiction over NRC-regulated wastes. Therefore, the text as written in the SEIS is an appropriately narrow construction of the category. No changes were made to the SEIS beyond the information provided in this response.*

B.5.23.3 Scope of the Assessment of Waste Management Impacts

Comment: RP032-054

The commenter noted that DSEIS Section 2.1.1.5 stated the following: "The composition and quantities of liquid waste from Ross Project processes related to uranium recovery are similar to those ranges provided in Table 2.7-3 of the GEIS (NRC, 2009a)." The commenter stated that the NRC staff's attempt to quantify the output of liquid wastes from the Ross Project, by indicating that it is "similar to a range" provided in another document conveys no useful information and fails to comply with NEPA, which requires that important environmental parameters be quantified wherever possible. Therefore, the commenter asked that the NRC staff provide: 1) estimates of the total quantity and composition of liquid waste requiring deep well disposal from the Ross Project and all future projects in connection with future use of the Ross Project CPP and 2) the number, planned locations, target aquifers, and required capacities of all deep-disposal wells that would be created by potential future development in the Lance District.

Response: *The relationship of the Ross Project SEIS to the GEIS is described in SEIS Sections 1.1 and 1.4.1. As noted, the SEIS is a supplement to the GEIS. The GEIS provided a starting point for the NRC's NEPA analyses of ISR facilities located within the regions evaluated in the GEIS. The Ross Project SEIS tiers from and incorporates by reference from the GEIS relevant information, findings, and conclusions concerning potential environmental impacts. The extent to which the NRC staff incorporated GEIS impact conclusions depended on how closely the Applicant's proposed facility, wellfields, activities, and conditions at the proposed Ross Project paralleled the reference facility description, activities, regional conditions, and information or conclusions in the GEIS. The NRC's determinations regarding environmental impacts and the extent to which GEIS impact conclusions were incorporated by reference are described throughout FSEIS Section 4.*

The DSEIS statement quoted by the commenter was provided in the opening paragraph of the "Liquid Effluents" subsection of DSEIS Section 2.1.1.5. However, the opening paragraph of Section 2.1.1.5 directs the reader to SEIS Section 4.14, which contains a more detailed discussion on liquid effluents associated with the Ross Project. The types of liquid wastes and byproduct material that would be disposed of via deep-disposal wells at the Ross Project, based upon information provided by the Applicant, is predominantly waste water, excess permeate during brief periods of concomitant operation and aquifer restoration, and brine. The quantities of the types of liquid wastes disposed during different phases of the Ross Project are presented in FSEIS Table 4.10.

The Proposed Action analyzed in this FSEIS is the Ross Project, and not the "Lance District Project." Therefore, the direct impacts of the activities related to any potential Lance District development projects are only analyzed in this document to the extent that they are applicable to the cumulative impact analyses for the Proposed Action. The cumulative impacts of liquid effluent disposal by deep-well injection that includes potential development in the Lance District as a reasonable foreseeable future action are discussed in FSEIS Section 5.17.1.1. The NRC's staff responses to Comment Nos. RP032-002, RP032-067, and RP041-009 describe the environmental-review process that the NRC would follow if the Applicant were to submit a license amendment application to the NRC to expand its operation into any of the satellite areas.

Comment: RP041-017

The commenter noted that the DSEIS did not disclose the environmental impacts related to "11e.(2)" (e.g., byproduct) material disposal. Further, the commenter reiterated that the DSEIS lacked any discussion of impacts related to 11e.(2) material disposal for either the Ross Project or for future satellite areas, and noted that a disposal facility was not identified for disposal. The commenter indicated that this type of analysis must be performed prior to the NRC's decision, not after the Source and Byproduct Materials License is issued. The commenter expressed that the SEIS should, at the very least, list potential disposal facilities as well as the impacts related to each in the range of alternatives described and analyzed in the SEIS.

Response: *Table 4.10 in SEIS Section 4.14.1.1 indicates the types of wastes that would be generated at the Ross Project as well as the facilities where the different waste streams would be disposed. (The Table includes solid-phase "byproduct" waste, however, rather than "11e.(2)" waste; see Comment No. RP024-067 for related information.) All wastes, except the liquid wastes that are disposed of via deep-well injection (see SEIS Section 4.14.1.1) or in the mud pits discussed in the response to Comment No. RP032-049, would be disposed of offsite and not in or on the Ross Project area. DSEIS Section 5.17.2 discussed the NRC staff's assumption that all of the waste disposal facilities that would accept and dispose of Ross Project byproduct material and other wastes would have been properly licensed or permitted. This would ensure that all environmental impacts related to such waste disposal will have been evaluated by the licensing and/or permitting agency. License Condition 12.5 of the Draft Source and Byproduct Materials License for the proposed Ross Project would require that the Applicant submit all disposal agreements for byproduct material (and, consequently, it would identify the respective disposal facilities) to the NRC.*

B.5.23.4 References

(US)EPA (Environmental Protection Agency). *EPA Scoping Comments for Proposed Ross Uranium In-Situ Recovery Project, Crook County, WY*. Washington, DC: USEPA. Dec 29, 2011. ADAMS Accession No. ML12067A042.

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. *Safety Evaluation Report for the Strata Energy, Inc. Ross ISR Project, Crook County, Wyoming*. Washington, DC: USNRC. 2014a. ADAMS Accession No. ML14002A107.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Technical Report, Volumes 1 and 2 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012b. ADAMS Accession Nos. ML121020357 and ML121020361.

WDEQ/WQD (Wyoming Department of Environmental Quality/Water Quality Division). *Authorization to Discharge Wastewater Associated with Pump Testing of Water Wells Under the Wyoming Pollutant Discharge Elimination System*. Authorization #WYG720229. Cheyenne, WY: WDEQ/WQD. 2011a. ADAMS Accession No. ML13015A695.

WDEQ/WQD. *Strata Energy*, *Inc. – Ross Disposal Injection Wellfield*, *Final Permit 10-263*, *Class I Non-hazardous, Crook County*, *Wyoming*. Cheyenne, WY: WDEQ/WQD. 2011b. ADAMS Accession No. ML111380015.

WDEQ/WQD. *Authorization Associated with Ground Water Well Pump Testing and Development. Well Pump Test for Uranium Wells Under the Wyoming Pollutant Discharge Elimination System*. WYG720229. February 2013. ADAMS Accession No. ML13015A695.

B.5.24 Cumulative Impacts

B.5.24.1 Scope of Cumulative-Impact Analyses

Comments: RP011-005; RP013-004; RP014-005; RP016-011; RP019-005; RP023-003; RP033-003; RP039-016; RP040-005; RP041-011; RP043-003

The commenters stated that the NRC should take a look at the cumulative impacts from the entire project (i.e., the entire Lance District), not just the Ross Project. Multiple commenters noted that cumulative impacts to water quality and quantity should be analyzed in the SEIS. The commenters expressed concern regarding risk of pollution to air and water, pollution from dust and light, and traffic. One of the commenters also stated that the NRC should assess the impacts of the potential drawdown of water and the likelihood of leaks and excursions from drillholes. The commenter also expressed concern that the proposed Ross Project could

potentially prevent livestock grazing and recreation in and around the area of Oshoto and Devils Tower.

Response: *The NRC staff described cumulative impacts to and from the Lance District throughout FSEIS Section 5. The FSEIS also specifically discusses cumulative impacts to water quality and air quality in Sections 5.7 and 5.9, respectively. Impacts to water resources and air quality from the Proposed Action can be found in FSEIS Sections 4.5 and 4.7, respectively. Please see also the NRC staff's response to Comment No. RP011-006 regarding the potential for drawdown. Leaks and excursions from improperly abandoned drillholes are discussed in Comment No. RP007-001. Grazing and recreation impacts are discussed in the FSEIS in Section 4.2.1. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP011-006; RP013-003; RP014-003; RP019-003; RP023-002; RP025-003; RP030-003; RP039-014; RP042-003; RP043-004

The commenters asked the NRC staff to consider fully that the "in situ [uranium-recovery] leach process" uses a high volume of water, which has the potential to drawdown surrounding aquifers. These aquifers provide the area's drinking water for humans and livestock. Other commenters noted that the proposed Ross Project area suffers from drought. Some commenters stated that potential for aquifer depletion could include the Madison-Formation aquifer, which supplies water to many municipalities in Wyoming, South Dakota, and Montana.

Response: *The short- and long-term drawdown impacts on the surrounding aquifers are addressed by the NRC staff in FSEIS Section 4.5.1. FSEIS Section 6.2.5 describes the Applicant's proposed monitoring program that includes measuring water levels in wells within, above, and below the ore-zone (i.e., the production zone) aquifers that could be affected by the proposed Ross Project. The conservative regional impact analysis, based upon ground-water modeling by the Applicant, predicts a minor reduction in the available head in wells used for stock, domestic, and industrial use. Although these effects would be localized and short-lived, the Applicant would commit to provide an alternative source of water of equal or better quantity and quality, subject to Wyoming water-statute requirements, in the event that aquifer-restoration operations prevent the full use of a well (Strata, 2011a). FSEIS Section 4.5.1.2 describes 1) the wells in which the water level is predicted by the model to be impacted by the Proposed Action and 2) the proposed mitigation measures. The duration of the mitigation measures throughout the operation phase of the Project are described in FSEIS Sections 4.5.1.2 and 4.5.1.3. Also, please see the NRC's response to Comment Nos. RP032-039, and RP032-065 regarding the potential for ground-water drawdown. As described in the response to Comment Nos. RP015-003; RP026-001; RP026-002; RP028-002, impacts to the Madison aquifer are highly unlikely. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-677

The commenter suggested a revision to the statement that the land-use cumulative-impacts analysis timeframe begins in 2013. This suggestion was made due to the fact that previous land-use activities, such as agricultural production and human-infrastructure construction (e.g., road installation) have occcurred historically.

Response: *The NRC staff agrees with the commenter that agricultural use and preconstruction activities started before 2013, with the majority of the preconstruction activities having been*

accomplished since 2009. To the best of the NRC's knowledge, current and historical land use has been ranching as well as some oil- and gas-production activities since the 1950s. In addition, the preconstruction activities that the Applicant could accomplish prior to the Ross Project's licensing, including those that the DSEIS evaluated, were assumed to include road and building construction as well as pipeline and utilities installation. The evaluation of these preconstruction activities has been incorporated into the SEIS as part of Alternative 2, No Action, as was defined in SEIS Section 2.1.2. Within the cumulative-impact analysis, SEIS Section 5, all preconstruction activities are assumed to have been completed, and they therefore represent "past actions." The cumulative-impact timeframe's beginning in 2013 remains the same in the FSEIS, because that is the year that the Ross Project was estimated to begin major Project construction. The NRC has revised the text in SEIS Section 5.3.2 as a result of this comment, clarifying the timeframe's basis.

Comment: RP029-004

The commenter asserted that Strata has plans not for a single mine but for a series of mines and that the impacts of each of these mines would be cumulative and would result in polluted ground water, polluted topsoil, ground-water depletion, and health impacts on residents and livestock.

Response: *The NRC's responses to Comment Nos. RP032-002, RP032-067, and RP041-009 set forth the basis for this Ross Project SEIS and describe the environmental-review process the NRC would follow if Strata were to submit a license-amendment application to the NRC to expand its operation into any satellite areas, including those in the Lance District. The cumulative impacts of future development within the Lance District are assessed in Section 5 of the FSEIS. Specifically, impacts to soils, ground water, and health are addressed in FSEIS Sections 5.6, 5.7 and 5.16, respectively.*

Comment: RP032-024

The commenter asked what fraction of the Applicant's reasonably foreseeable mining activities in Wyoming involve development within the Lance District and what fraction of the Lance District activities are already planned and included in the business plan of the Applicant. The commenter also asked that the SEIS provide the most recently updated schedule for development of the Lance District development planned by the Applicant or any other applicant for an NRC license. The commenter asked that the SEIS include a detailed map showing the cumulative extent of the planned and contemplated wellfield areas to be mined and enclosed by fences in the course of Lance District development that would utilize the proposed CPP to be licensed pursuant to the Ross Project. The commenter also asked that the SEIS discuss when specific geographic areas will be mined, and to what extent the schedule overlaps that of the Ross Project.

Response: *As discussed in SEIS Section 5.2, the reasonably foreseeable activities considered in this SEIS are those that, due to their location and timing with respect to the Ross Project, could result in cumulative impacts when considered with the proposed Ross Project. Potential activities identified by the Applicant that are considered to be reasonably foreseeable within the context of the cumulative impacts assessment in this SEIS are those ISR-related activities within the Lance District. The NRC staff considered as reasonably foreseeable those potential satellite projects shown in FSEIS Figure 2.2: Ross Amendment Area 1, Kendrick, Richards, and Barber. The general locations of each of these areas is shown in SEIS Figure 2.2, however the*

specific locations for wellfields that may be developed within these areas is not currently available. The development schedule of the proposed Ross Project and the potential Lance District satellites is shown in SEIS Figure 2.6. The NRC is not aware that any other company is considering submitting a license application to construct and operate an ISR facility within the Lance District. The NRC is also not aware of what future activities the Applicant includes in its business plan for the Lance District beyond the information contained in the Applicant's license application, which is the subject of this SEIS. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-068

The commenter requested that the discussion of the land use for minerals and energy in DSEIS Section 3.2.3 include all of the "potential projects" planned for the Lance District by Strata's corporate parent, Peninsula Energy, Ltd.

Response: *The NRC has moved the listing of potential, future mineral and energy projects around the Ross Project to Section 5.2 of the FSEIS, which is the appropriate section for discussion of past, present, and reasonably foreseeable future events that are considered in the NRC's evalution of cumulative effects. In addition to the potential ISR projects listed in Section 3.2.3 of the DSEIS, FSEIS Section 5.2 includes the potential ISR projects in the Lance District.*

Comment: RP032-069

The commenter asked that the NRC staff provide the compliant Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("the JORC Code") uranium-resource estimates for "recoverable uranium" in the area encompassed by the potential Lance District.

Response: *The revised JORC Code-compliant resource estimate is 24.4 million kg [53.7 million lb] U_3O_8 (as of January 23, 2013) (Infomine, 2013).*

Comment: RP032-082

The commenter referenced the following statement in the DSEIS: "Several industries presently conduct activities in and near Crook County, activities which could have environmental impacts that, when combined with those of the Ross Project, could be greater than the individual impacts of the Ross Project." The commenter stated that because these additional activities include similar uranium recovery projects, as well as other activities known to impact environmental systems (e.g. oil and gas recovery), it should be assumed that the Proposed Action is necessarily smaller than the sum of all impacts due to external activities, as opposed to ambiguously representing the proposed action as potentially inconsequential within the context of cumulative impacts analysis.

Response: *The subject statement was found in DSEIS Section 5.2.1, in the paragraph introducing the discussion of present and reasonably foreseeable future actions within the geographic area used for cumulative-impact analyses. The cumulative-impact analyses for the resource areas addressed in this SEIS are provided in SEIS Sections 5.4 – 5.17. For each resource area, the NRC staff has determined the incremental contribution of the impact of the Proposed Action (defined as SMALL, MODERATE, or LARGE) to the overall cumulative impact*

to the resource area. No changes were made to the SEIS beyond the information provided in this response.

Comment: RP032-086

The commenter questioned the assumptions underlying the calculation of the area of soil disturbance at the proposed Lance District satellite areas for purposes of cumulative-impact analysis.

Response: *As discusssed in SEIS Section 5.2.2.1, the Applicant indicates that the lixiviant from the wellfields at the Ross Amendment Area 1 and Kendrick satellite would be piped to and from the Ross CPP. The Applicant expected to construct an IX facility at the Barber satellite area to manage lixiviant and recover uranium from the lixiviant onto resin (Strata, 2012a). The Applicant noted that the wellfields at the Richards satellite area could be piped so that lixiviant is delivered to either the Ross CPP or the Barber IX plant. Since none of the potential Lance District satellite areas would have a CPP, the area of soil disturbance would be smaller at each than at the Ross Project. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP032-087

The commenter inquired to what extent the cumulative geology-impacts analysis would change if it were to consider successive (or replacement) operational capacity versus concurrent operations in the potential Lance District satellite areas. The commenter also asked for justification for the conclusion in the DSEIS that there would be a SMALL impact as a result of drilling, plugging, and abandonment of drillholes for either of these operational scenarios.

Response: *The NRC staff's analysis of the cumulative impacts to geology and soils is provided in SEIS Section 5.6. The analysis considered the timing of the potential development of the satellite areas as shown in Figure 2.6. The distinction between successive versus concurrent is not relevant to the schedule shown in Figure 2.6. The NRC staff determined that the cumulative impacts to geology and soils in the geology and soils cumulative-impacts study area would be SMALL. The soil disturbance associated with the Ross Project area and the other satellite areas in the Lance District would be limited to approximately 5 percent of the approximately 9,000-ha [22,200-ac] Lance District with 95 percent of the area remaining undisturbed. This disturbance to geology and soils would be dispersed throughout the Lance District. Also, the NRC notes that reclamation and restoration of the areas will be required by the Applicant's Source and Byproduct Materials License, where the NRC must approve the related plan(s) (e.g., DP or RAP). No changes to the SEIS were made beyond the information included in this response.*

Comment: RP032-088

The commenter referenced the SEIS Section 5.7.1 statement, "The geographic area for the evaluation of surface-water cumulative impacts has been defined as the Little Missouri River Basin, from the Ross Project downstream to the Wyoming/Montana border (see Figure 3.10 in SEIS Section 3.4.2)." The commenter asked: 1) Does limiting the geographic area of study to the upper reaches of the Little Missouri River Basin preclude or unnecessarily limit the scope of study on impacts that could be experienced beyond this area of data collection and monitoring? 2) What additional watersheds would be impacted by future potential uranium-recovery projects

in the Lance District? 3) What would be the cumulative demands on water resources from future projects within the Lance District in conjunction with all other reasonably foreseeable sources of water consumption and/or water-quality degradation in the same area?

Response: *Limiting cumulative surface-water impacts to the area of Little Missouri River Basin, from the Ross Project downstream to the Wyoming/Montana border is appropriate since activities outside the Basin would not impact surface-water flows inside the Basin. Three of the four potential satellite areas in the Lance District would be located in the Belle Fourche River Basin and impacts to that Basin would not be additive to the impacts in the Little Missouri River Basin. A sentence was inserted in Section 5.7.1 to clarify the location of the potential satellite areas in the Lance District. Further information on the surface-water hydrology of the potential satellite areas or projects in the Lance District is not available.*

Comment: RP032-089

The commenter asked the following questions regarding SEIS Section 5.17: 1) What methodology was used to determine the 20-year timeframe for evaluating the cumulative impacts of deep-well injection of liquid wastes and why was a longer timeframe not employed? 2) What analysis has been performed specific to the formations existing in the Ross Project area that studied the potential for migration of liquid wastes and the associated timelines for this migration and/or transformation into acceptable forms?

Response: *The 20-year timeframe used in the DSEIS for evaluating the cumulative impacts of deep-well injection of liquid wastes is a conservative duration sufficient to include: 1) 14 years from construction through decommissioning of the Proposed Action; 2) the requirement of the UIC Class I Permit issued by WDEQ/WQD for the injection wells that the wells are plugged and abandoned within six months after waste injection ceases; and 3) five years for the land surface reclamation to be complete. The NRC has revised the FSEIS Section 5.17.1 to clearly define the timeframe for its assessment of the cumulative impacts of deep-well injection for the duration of the Ross Project. Because the time for surface reclamation is covered under the cumulative impacts of soil discussed in SEIS Section 5.6, it is not included in the revised timeframe for the cumulative effects analysis of deep-well injection.*

Sections 4.5.1.3 and 5.7.2 establish that 10 CFR Part 40, Appendix A, Criterion 5B(5) requires the ground-water quality within the exempted aquifer to meet standards that ensure that ground water outside of the exempted aquifer is protected. The NRC requires the Applicant to demonstrate through hydrologic studies, to the satisfaction of the NRC, that water outside the exempted aquifer is not impacted before the restoration of a wellfield would be approved. In addition, as described in SEIS Section 5.7.2, there are no impacts to water quality from the Nubeth research and development project formerly conducted in the Ross Project area between 1978 – 1983. Also, as discussed in SEIS Section 5.7.2, due to the natural geochemical conditions of the aquifer outside the exempted portion of the ore-zone aquifer that would be subject to uranium-recovery activities, elements such as uranium, vanadium, and arsenic would naturally change geochemical form and become solid minerals. Clarifying text has been added to SEIS Section 5.7.2, Ground-Water Quality, as well as in SEIS Section 5.17.1 in response to this comment.

Comment: RP032-090

The commenter noted the statement in DSEIS Section 5.17.1.2, "Given that the potential impacts from deep-well injection are localized, generally 0.4 km [0.25 mi], the cumulative impacts of disposal of liquid byproduct wastes would be SMALL, to which the Ross Project would contribute only a SMALL incremental impact" and asked the following questions: 1) The commenter asked whether the NRC would describe why only using the physical geographic footprint (approximately 0.4 km [0.25] around each well) in relation to the overall Ross Project area is appropriate for the NRC's assessing the cumulative impacts of 17 deep-injection wells within the Ross Project area and potential satellite areas and questioned the NRC staff's conclusion that the cumulative impacts are SMALL. 2) What data are available regarding the failure rates and historical performance of deep-well waste storage, particularly in industrial activities similar to ISR? Do these data, when incorporated into the Ross Project cumulative-impact analysis over the entire Project's lifecycle, still allow for the conclusion that these impacts are SMALL?

Response: *The determination that potential impacts from deep-well injection are localized, generally 0.4 km [0.25 mi] as used in the cumulative-impact analysis was misinterpreted by the commenter as the physical geographic footprint around each well. The 0.4 km [0.25 mi] is the radius within the Deadwood/Flathead aquifer around the well at the point of injection in which potential impacts may occur. As described in SEIS Section 5.17.1.1, the minumum potential-impact radius of 0.4 km [0.25 mi] was developed by the EPA as the area of review (EPA, 2001). EPA has defined an "area of review" for a Class I well as the zone of endangering influence around the well, or the radius at which pressure due to injection may cause the migration of the injected wastes and/or poor-quality water in the target formation into an underground drinking water source EPA allows the area of review to be determined by either a fixed radius or mathematical computation. When a fixed radius is used, the area of review for Class I nonhazardous wells must be, at a minimum, 0.4 km [0.25 mi] unless specified as greater by State regulations. Although the Applicant used 0.4 km [0.25 mi] as the area of review, the estimated area of influence calculated by Strata in its application to WDEQ for a Class I UIC permit was less than 0.4 km [0.25 mi] so the minimum radius prescribed by EPA is appropriate (Strata, 2011b). Section 5.17.1.1 was modified in the FSEIS to clarify the information provided in this response.*

NRC does not have information on failure rates and historical performance of deep-well waste storage. The scope of this SEIS does not include analysis of information from other industrial activities. As discussed is Sections 2.1.1.5 and 4.4.1.2 and in the response to Comment Nos. RP017-011 and RP032-055, the UIC Class I permit from the WDEQ sets a maximum limit on the injection pressure (2,570 psi) and sets a range for the annulus pressure (200 to 800 psi). Injection at pressures less than the injection limit ensures that the capacity of the target aquifers (Deadwood and Flathead) is not exceeded and that potential impacts do not extend beyond the area of review as defined by EPA.

Comment: RP035-015

The commenter asked that power plants be considered in the air-quality cumulative-impacts discussion in SEIS Section 5.9 to augment the existing discussion of mining actvities as well as oil- and gas-production facilities.

Response: *The NRC recognizes that there are several coal-fired and natural-gas power plants within the air-quality cumulative-impacts study area. Thus, the NRC has augmented the related discussion in SEIS Section 5.9 as suggested. Coal-fired power plants, particularly older plants with limited pollution controls, emit far more pollution than natural-gas-fired power plants. Several of the older coal-fired power plants in Wyoming are currently the subject of EPA actions to compel the plants' upgrading with more contemporary pollution controls that would reduce CO_2 and other emissions. However, only the Wyodak power plant, which is near Gillette, is within the air-quality cumulative-impacts study area and has not been upgraded to contemporary standards. Wyodak is a significant emitter of CO_2 (> 2.7 million T/yr [> 3 million t/yr]) and other hazardous air pollutants (HAPs).*

The other coal-fired power plants within the air-quality cumulative-impacts study area emit much less pollution due to advanced controls. The newest power plant, the Dry Fork Station, 11 km [7 mi] north of Gillette, is a natural-gas-fired plant with advanced pollution controls, or BACT. Both Neil Simpson (near Gillette) and Ben French (near Rapid City) produce power using both natural-gas and coal. The Black Hills Corporation, however, has announced the closure of the 22-megawatt Unit 1 at the Neil Simpson power plant (as well as the older coal-fired Osage plant, which is outside of the study area) in March 2014. Two Elk, a waste-coal power plant proposed in the mid-1990s in northeast Wyoming, has yet to be financed or built. The future development of coal-fired power plants within the study area, and across the country, would be subject to stringent pollution controls, if they were to be built. Marion Loomis, the Executive Director of the Wyoming Mining Association, has predicted that many older plants will be shut down throughout the United States within the next ten years and that some will be converted to natural gas (Wyoming Star Tribune, 8/8/2012). Therefore, new coal- or natural-gas-fired power plants without *advanced pollution controls (i.e., BACT) were not included in the air-quality cumulative-impacts analysis. Per this comment, the FSEIS has been revised in Section 5.9 to include this information regarding power-plant cumulative impacts.*

Comment: RP035-042

The commenter noted that the DSEIS utilizes information from 2003 and 2005 to disclose mining, and oil and gas (including coal bed methane) development. The commenter stated that there has been growth in oil and gas development since 2005 and recommended that updated oil and gas information be included in the Final EIS cumulative air impacts discussion.

Response: *As noted in SEIS Section 5.9, BLM evaluations of potential air quality impacts from future coal and CBM mining and oil and gas production in the Powder River Basin include recent cumulative air quality impacts to support increased coal production. Emissions data were acquired for the base year of 2004 for NO_2, SO_2, $PM_{2.5}$ and PM_{10}, and then modeled to 2020. Updated models were not found. Given the distance to the Ross Project site, small differences in models, if available, would not likely change the designation of SMALL impacts. No changes were made to the SEIS beyond the information provided in this response.*

Comments: RP041-014; RP043-001

One commenter stated that the NRC does not disclose the consequences of minimal inspections and enforcement related to ISR projects in Wyoming, including the Ross Project, as the NRC does not have an office in Wyoming and does not have adequate staff to inspect uranium-recovery operations. Because of this, the commenter stated that the SEIS needs to describe how inspection and enforcement actions would take place at the Ross Project and

whether current NRC staff levels would be sufficient to fully inspect the Applicant's ISR facility and enforce the findings of those inspections. This point, the same commenter stated, would be especially important because NRC's environmental-impact conclusions rely on effective BMPs and mitigation measures. The commenter added that few fines have been levied over the years at uranium-recovery facilities in Wyoming, even though these facilities have routine license violations including excursions, spills, and leaks. The commenter stated that this history does not give the public much confidence in NRC's inspection and enforcement actions. Another commenter stated that the Ross Project area is even more likely to have problems because of the thousands of old drillholes there.

Response: *As a matter of practice, the NRC expects from its licensees compliance with regulatory requirements and license conditions. When the NRC evaluates potential environmental impacts of such a facility, consequently, the NRC staff explicitly employs this assumption. As described in GEIS Section 1.7.1, the NRC staff would conduct periodic inspections of the Ross Project to determine compliance with applicable regulatory requirements, license conditions, and approved procedures (NRC, 2009b). Potential violations and allegations would be evaluated and addressed through the appropriate NRC enforcement or allegation programs. Enforcement actions can result in fines, corrective actions, or injunctive relief to address regulatory-requirement violations. No change was made to the SEIS beyond the information provided in this response.*

B.5.24.2 Onsite Excavated Pits

Comment: RP032-049

The commenter asked if the mud pits that the Applicant would use to dispose of well-drilling fluids would be subject to the applicable cleanup criteria in the Applicant's DP or RAP, what standards would be applied to the mud pits in these plans to determine whether they present long-term radiological and chemical impacts if left in place, and what the Applicant's NRC-approved DP would require for cleanup of the pits. The commenter also asked if some or all of the mud pits would qualify for a determination that they cannot economically meet the criteria for cleanup. If a radiation survey documents that some or all mud-pits would have long-term adverse environmental impacts, and some or all of these mud pits qualify for a determination that they cannot economically meet the criteria for cleanup, the commenter asked what steps would be taken to mitigate their environmental risks. The commenter asked that the NRC briefly summarize and provide detailed citations to technical literature demonstrating that the cumulative impacts of many thousands of mud pits would not present an elevated risk of environmental consequences.

Response: *As stated in Section 2.1.1.4 of the SEIS, the mud pits used for the disposal of drilling fluids and muds during the installation of wells would be specifically included in the Applicant's pre-decommissioning radiation surveys that would be conducted to identify those areas where decontamination would be required to meet applicable cleanup criteria or where the applicable cleanup criteria could not be economically met. The Ross Project area could be released for unrestricted use in conformance with the radiation-dose criteria for unrestricted release in 10 CFR Part 40, Appendix A. Please see NRC's staff response to Comment No. RP032-051 for additional discussion on the radiation surveys and soil removal if necessary that would be conducted on the mud pits according the approved DP.*

SEIS Section 5.6 discusses the cumulative impacts to geology and soils associated with the Ross Project. As stated, the NRC staff has determined that the cumulative impacts to geology and soils in the geology and soils cumulative-impacts study area would be SMALL. The soil disturbance associated with the Ross Project area and the other potential satellite areas in the Lance District would be limited to approximately 5 percent of the approximately 9,000-ha [22,200-ac] Lance District with 95 percent of the area remaining undisturbed. This disturbance to geology and soils would be dispersed throughout the Lance District and site restoration would be required. The proposed Ross Project would have a SMALL incremental impact on the SMALL cumulative impacts to geology and soils in the geology and soils cumulative-impacts study area. The literature referenced by the NRC staff in its assessment of cumulative impacts is listed in Section 5.18, "References."

B.5.24.3 Past, Present, and Reasonably Foreseeable Future Actions

Comment: RP032-029

The commenter referenced the SEIS Section 2.1.1.2 statement, "To specifically avoid the injection restriction problems that plagued the Nubeth operation, the Applicant has proposed several improvements to well-design, well development, and filtration (Strata 2011a; Strata, 2011b)." The commenter requested additional information on improvements to well design, well development, and filtration-system design proposed by the Applicant. Specifically, the commenter asked the NRC to: 1) describe the injection-restriction problems that plagued the Nubeth operation; 2) describe the specific primary purpose and function of each improvement to well design, well development, and filtration-system design proposed by the Applicant; 3) discuss which improvements are directed primarily or exclusively at increasing uranium-production efficiency, and which are directed primarily or exclusively to improving safety and reducing the risk of environmental impacts; 4) explain which improvements, if any, did the NRC assume that it would accept and incorporate into its Source and Byproduct Materials License for the purposes of the SEIS analyses; and 5) describe how these improvements, taken individually and together, affect the risk of environmental impacts as a result of the Ross Project and the potential satellite areas in the Lance District (NRC, 2014b).

Response: *As noted in SEIS Section 2.1.1, the Applicant attributed previous issues with plugging of the aquifer and subsequent injection restrictions to the buildup of fine particles and organic material in the Nubeth wellfield. As discussed in SEIS Section 2.1.1.1, the Applicant has indicated that improvements to the well design, well development, and filtration-system design would be used at the proposed Project to avoid the injection restrictions that Nubeth encountered (Strata, 2011a). Examples of the improvements in filtration, which are frequently used today as compared to the time that Nubeth was operating, include filters that exclude smaller, finer particles and also filter cartridges that provide a larger surface areas as well as more contemporary well-purging techniques instead of the earlier technique of "air lifting" during the development of injection and recovery wells. The Applicant's avoiding injection restrictions would be necessary to maintain predictable hydrologic connectivity between injection and recovery wells. Predictable hydrologic connectivity is necessary to realize efficient uranium recovery as well as to ensure the recovery of injected lixiviant, which in turn would minimize environmental impacts. The SEIS assumed properly operating uranium-recovery wellfields. As described in the response to Comment RP032-027, controls on injection pressure imposed by the WDEQ/LQD's Permit to Mine would detect injection restrictions and require cessation of injection in the affected wells. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP035-007

The commenter noted the DSEIS discussed the "undesirable plugging of the aquifer" that occurred during the Nubeth research and development operation in DSEIS 2.1.1. The commenter stated that there is no explanation of why the aquifer became plugged or what this means in terms of the operation or environmental impacts. The commenter requests that, in order to provide reassurance that the situation that caused the plugging of the aquifer is understood and would be avoided for the proposed Ross Project, the FSEIS include lessons learned from the failure of the Nubeth research and development operation.

Response: *The Nubeth operation is discussed in DSEIS Section 2.1.1. On page 2-11 of the DSEIS, the cause for the plugging of the aquifer is provided as being due to the build-up of fine particles. The DSEIS also explains what this means in terms of the operation when it states, on page 2-11, that the plugging of the aquifer restricted injection rates, which eventually led to the Nubeth operation's premature shutdown. It is outside of the scope of this SEIS to evaluate the environmental impacts of the Nubeth operation. However, the environmental impacts of the Nubeth operation are considered in the cumulative-impacts analyses for the Ross Project in Section 5 when applicable. FSEIS Section 2.1.1 has been revised to provide additional information regarding the NRC staff's understanding of the cause of the plugging of the aquifer that occurred during the Nubeth operation. FSEIS Section 2.1.1.1 has also been revised to note the Applicant's commitment to incorporate improved well-construction designs and well-development techniques in order to minimize the potential for the Nubeth operation's injectivity problems to re-occur at the Ross Project.*

Comment: RP036-043

The commenter referenced the following statement in DSEIS Section 5.2.1.1, "Most of Wyoming's current oil production is from old oil fields with declining production and the level of exploration drilling to discover new fields has been low." The commenter indicated that the information included in the DSEIS on oil production was outdated and inaccurate and that conventional oil and gas exploration and production of deep rock units has been on the rise, particularly in the Powder River Basin, with hundreds, if not thousands, of wells predicted to be developed over the next few years. The commenter recommended that the NRC staff contact the Buffalo, Casper, and Newcastle BLM Field Offices for more current information and then correct and revise the respective cumulative-impacts analysis to reflect current energy-development predictions.

Response: *Data on the production of oil and gas in Crook and Campbell Counties posted by the Wyoming Oil and Gas Conservation Commission (WOGCC) [at www.wogcc.state.wy.us] support the conclusions presented in the 2005 BLM study that is referenced in SEIS Section 5.2.1.1. In Crook County, the production of oil and gas has declined from its peaks in 1985 – 1990 until about 2007, from which time the production has remained approximately constant. In Campbell County, gas production has declined steadily since its peak in 2001 – 2005, and oil production has declined since approximately 1992, despite slight increases in 2010. The BLM's Wyoming State Office's "White Paper on Hydraulic Fracturing," dated July 2013, includes shallow CBM wells and the Niobrara Shale as likely targets for hydraulic fracturing technology [see http://www.blm.gov/wy/st/en/ info/NEPA/documents/og-ea/2014/febr.html]. According to the WOGCC, Crook County does not produce CBM nor has it seen any development in the Niobrara Shale that is occurring of southeastern Wyoming. Of all of the BLM Districts in*

Wyoming, projected water use for hydraulic fracturing is the lowest in the Newcastle District, which includes Crook Country. The NRC revised the text in FSEIS Section 5.2.1.1 to include the more recent information on oil and gas development in Crook County that is provided in this response.

B.5.24.4 References

Infomine. At http://www.infomine.com/index/pr/pb275839.pdf (as of December 12, 2013). ADAMS Accession No. ML13346A632.

(US)BLM (Bureau of Land Management). "Hydraulic Fracturing White Paper," Appendix G of *BLM Environmental Assessment, High Plains District Portion of the February 2014 Lease Sale*. WY-070-EA-13-180. 2013. At http://www.blm.gov/wy/st/en/info/NEPA/documents/og-ea/2014/febr.html.

(US)EPA (Environmental Protection Agency). *Class I Underground Injection Control Program: Study of the Risks Associated with Class I Underground Injection Wells*. EPA 816-R-01-007. Washington, DC: EPA, Office of Water. 2001. ADAMS Accession No. ML13015A557.

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, Technical Report, Volumes 1 through 6 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2011b. ADAMS Accession Nos. ML110130333, ML110130335, ML110130314, ML110130316, ML110130320, and ML110130327.

Strata. *Ross ISR Project USNRC License Application, Crook County, Wyoming, RAI Question and Answer Responses, Environmental Report, Volume 1 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata. 2012a. ADAMS Accession No. ML121030465.

WOGCC (Wyoming Oil and Gas Conservation Commission). "Statistics by County." At http://wogcc.state.wy.us/urecordsMenu.cfm?Skip='Y'&oops=#oops# (as of August 23, 2013).

Wyoming Star Tribune. August 8, 2012. At http://trib.com (as of September 11, 2013).

B.5.25 Impact Conclusions

Comments: RP020-007; RP024-432

The commenters referenced the following SEIS Section 4.5.1.2 statement, "The most significant estimated drawdown occurs in the Wesley No. TW02 well located in the SWSW Section 8, Township 53 North, Range 67 West, with 10.2 m [33.3 ft] of drawdown or 42.4 percent of the available head under Scenario 2 at the end of aquifer restoration." One commenter noted that additional factors should be considered during the NRC staff's evaluation of this impact. The commenter pointed out these factors and then indicated they should be discussed in the SEIS:

1) As described in the license application, the well is located along the Little Missouri River floodplain, immediately adjacent to the no-flow boundary of the ground-water model. Hence the presence of the no-flow boundary may conservatively bias the estimated drawdown.

2) Water levels in the Wesley well fluctuated between 4.5 – 6.7 m [15 – 22 ft] during the year monitoring was conducted. In addition, the ground-water model incorporated the lowest water level, which added conservatism to the analysis.

3) Given the limited use by Strata's Field Office personnel and livestock (primarily several horses), the moderate reduction in available head should not materially decrease the yield from the well (Strata, 2011b).

Another commenter inquired about the general impacts to ground-water quantity and the mitigation measures that would assist in preserving water quantity.

Response: *The NRC agrees that additional information pertaining to water-quantity impacts would be useful. Therefore, the NRC staff has revised the text in SEIS Section 4.5.1.2 to indicate that the estimated drawdown is a result of the ground-water model's execution, which in turn incorporated conservative assumptions. The text has also been revised to indicate that this well (i.e., the Wesley well) has very limited use.*

Comment: RP024-002

The commenter recommended that the NRC staff use the word "potential" when the SEIS discusses the possible impacts or effects which had been identified during the staff's evaluation of the proposed Ross Project. The commenter noted that the NRC staff evaluated possible impacts or effects, and these impacts may or may not result from the construction, operation, aquifer restoration, and decommissioning phases of the Ross Project.

Response: *The NRC staff agrees that the word "potential" should be used as often as appropriate in a discussion of the impacts of the Ross Project and/or other proposed projects. As a result of this comment, the NRC inserted the word "potential" into the FSEIS, where and as often as it was appropriate.*

Comment: RP024-463

The commenter referenced a statement in SEIS Section 4.5.1.4, "After uranium-recovery operation is complete, unidentified, improperly abandoned wells (i.e., from previous subsurface explorations not associated with the Applicant or its operations) could continue to impact aquifers above the ore-zone and adjacent aquifers by providing hydrologic connections between

aquifers." The commenter requested that the NRC staff clarify its discussion of impacts to shallow aquifers and noted that the impacts described seem highly unlikely given that the pre-licensing water levels in the ore-zone aquifer are below the lowest portion of the shallow-aquifer system.

Response: *The NRC staff agrees with the commenter's assertion that the impact to shallow aquifers is highly unlikely. The statement identified by the commenter has been deleted from SEIS Section 4.5.1.4.*

Comments: RP024-533; RP024-741

The commenter requested justification for the statement that potential impacts to historical and cultural resources would be "SMALL to LARGE," as discussed in SEIS Section 4.9.1.1. In addition, the commenter asked for a similar justification for "The Unavoidable Adverse Environmental Impacts and Short-Term Impacts and Uses of the Environment" in Table 8.1 which state that the potential historical, cultural, and paleontological impacts from the Proposed Action would be "SMALL to LARGE."

Response: *The Section 106 consultation process, which includes assessments of impacts to historical and cultural properties, is currently ongoing; thus, not all impacts to historical and cultural resources are known or can be characterized at this time. Nevertheless, potential adverse impacts to a historical and cultural site(s) would be LARGE during the construction phase of the Ross Project, for example, if such a site were to be disturbed by a backhoe or an excavator. The impacts of the Project's construction could result in damage to the physical integrity of historical and cultural site(s) so severe that the values upon which the site(s) achieved NRHP significance are lost (i.e., they are LARGE as defined in SEIS Sections 2.3, 4.1, and 5.3.2). The standard mitigation measure, which would reduce or eliminate such adverse impacts, is avoidance of the site(s) altogether. No changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-541

The commenter expressed agreement with the DSEIS's conclusion that the potential historical and cultural impacts under the No-Action Alternative would be SMALL; however, the commenter suggested that it might be important to also state that, under the No-Action Alternative, no new historical and cultural resources would be discovered and identified; thus, archaeologists would not gain any additional or new knowledge about ancient cultures.

Response: *The NRC staff has revised SEIS Section 4.9.2 as the commenter suggested. Cultural-resource inventories have already occurred within the Ross Project area. Therefore, any new knowledge that has been gained by way of these already-accomplished inventories would be recorded under any of the three Alternatives, including the No-Action Alternative. However, inadvertent discoveries that could occur during the Proposed Action or Alternative 3 would likely be reported and recorded, because the two Alternatives entail Federal and State involvement and the framework of the NHPA. Inadvertent discoveries would be less likely to occur under the No-Action Alternative. This would be because no systematic protocol would be established to discover, identify, characterize, and/or record such new knowledge, artifacts, or historical and cultural resources. Thus, there would be fewer discoveries and less knowledge gained and recorded about ancient cultures under the No-Action Alternative.*

Comments: RP027-002; RP032-009; RP035-001; RP040-007

The commenters stated that, throughout the DSEIS, many of the environmental impacts were assessed as "MODERATE to LARGE," but then these impacts were mitigated due to the Applicant's proposed use of BMPs. One commenter noted that the DSEIS didn't provide any specifics about what would be done, and when. Other commenters noted that BMPs may not be adhered to during the Ross Project, but the DSEIS nevertheless relied upon them and the assumption that the Applicant would adhere to them as well as assumed that the Applicant would immediately remedy problems that arise. Some commenters asserted that BMPs do not work and suggested that new practices be developed. If new, workable BMPs were not developed, then one commenter stated that new licenses for ISR projects should not, in good conscience, be issued by the NRC. Another commenter noted that the DSEIS relies on permitting requirements to minimize the potential impacts of the Proposed Action. That commenter suggested that, to help ensure that the required protection and mitigation measures are understood by the public, regulatory agencies, the Applicant, and the pertinent decision makers, the FSEIS and ROD should document the specific requirements that pertain to air quality and underground injection of liquids as well as specify the required BMPs that are applicable to the Ross Project.

Response: *The NRC staff's analyses described in Section 4 of the SEIS determined the potential for MODERATE to LARGE unmitigated impacts in only three instances: Transportation impacts due to significantly higher volumes of traffic on local and county roads during all phases of the Ross Project (SEIS Section 4.3); water-resource impacts to shallow ground waters as a result of spills and pipeline leaks (SEIS Section 4.5.1.2) during all phases of the Project; and impacts to ground water from excursions (SEIS Section 4.5.1.2). Except for the transportation impacts, the potential MODERATE to LARGE impacts to ground water would be mitigated by conditions that would appear in the final license (see the current Draft Source and Byproduct Materials License being developed for the Ross Project) and the requirements of the permits Strata already holds (e.g., UIC Class I and WDEQ's Permit to Mine), all of which require the use of BMPs on the part of the Applicant.*

BMPs have been used historically at all uranium-recovery facilities, and BMPs that have been shown to avoid or to reduce potential environmental impacts would be implemented at the Ross Project. The commenters do not provide any evidence for the claim that BMPs do not work. The NRC staff, in an SEIS, may rely on the mitigation measures that an Applicant includes in its license application (i.e., that the Applicant commits to) or that are conditions of its finalized source and byproduct materials license if it were to be issued by the NRC as a result of the Applicant's license application. In the case of BMPs, the Applicant's entire license application, and thus the proposed BMPs included therein, would be subject to Condition No. 9.2 in the (currently Draft) License (NRC, 2014b). This Draft License Condition mandates that "The Licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the [Applicant's] license application." Therefore, the NRC staff can reasonably rely on these mitigation measures in formulating a reasoned prediction of the environmental impacts of the Ross Project as proposed.

Additionally, if a Source and Byproduct Materials License were to be granted, the Ross Project facility would be routinely inspected by NRC staff and other State and Federal agencies for compliance with the respective requirements, license conditions, and/or permit stipulations. If any violations of NRC requirements or License Conditions are identified in an NRC inspection, the NRC staff may issue a written notice of violation and, in certain circumstances, may require

payment of a civil penalty, injunctive relief, and/or corrective actions or may seek criminal penalties. Such inspections provide a mechanism for the NRC staff to determine that systems are being operated properly and any mitigation responses are timely. The NRC staff also has a process for members of the public to report allegations of violations to the agency through an email or a telephone hotline. Additional information on the allegation process can be accessed through the NRC website (www.nrc.gov). No change was made to the SEIS beyond the information provided in this response.

Comment: RP041-007

The commenter indicated that the NRC fails to disclose the scope of the Ross Project, specifically the number of wells and wellfields. The commenter requested that the NRC disclose the size of the proposed action and analyze it in the SEIS. Specifically, the commenter asked how many wells and wellfields are included in the impact analyses.

Response: *FSEIS Section 2.1.1 describes the Proposed Action and states that the Ross Project would host 15 – 25 wellfield modules and would consist of a total of 1,400 – 2,200 recovery and injection wells (Strata, 2011a). Groups of wells (referred to as "wellfield modules") within a given wellfield would be connected with pipelines to a central collection facility called a "wellfield-module building," or a "header house." The wellfields would be surrounded by a perimeter-ring of monitoring wells. Additional wells to monitor the overlying and underlying aquifers would also be installed within the wellfields. The density of monitoring wells is described in Section 2.1.1.1 of the FSEIS and discussed in responses to Comments 032-019; 032-031; 032-036; and 032-041. These numbers of wells, wellfield modules, and wellfields are used consistently for the impact analyses in Section 4 of the FSEIS. In response to this comment, minor modifications were added to the referenced statements in Section 2.1.1 for text clarity.*

Comment: RP043-002

The commenter noted that the estimated size of the Ross Project varied throughout the DSEIS and asked how large the Project would be. The commenter also asked whether the impacts assessed as "SMALL" were so assessed as a result of the small number of wells that were used by the NRC staff to calculate the respective impacts.

Response: *Table 2.1 in SEIS Section 2.1 provides information on the total size of the Ross Project area (in hectares and in acres) as well as the total area of disturbance during the complete lifecycle of the Project. Figures 2.1, 2.4, and 2.5 in SEIS Sections 2.1 and 2.1.1 also illustrate the location of the Ross Project area and the proposed layout of the Project's facility and wellfields. The areas presented in Table 2.1 as well as the detailed areal estimates for specific Project activities, such as roads and other infrastructure as well as the CPP and the surface impoundments, are provided in SEIS Section 2.1.1 and used throughout the SEIS to assess impacts. SEIS Sections 4 and 5 consider all aspects of the proposed project, which includes the number of wells included in the Proposed Action in its evaluation of impacts. No changes were made to the SEIS beyond the information provided in this response.*

B.5.25.1 References

(US)NRC (Nuclear Regulatory Commission). "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601." Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

Strata (Strata Energy, Inc.). *Ross ISR Project USNRC License Application, Crook County, Wyoming, Environmental Report, Volumes 1, 2 and 3 with Appendices*. Docket No. 40-09091. Gillette, WY: Strata Energy, Inc. 2011a. ADAMS Accession Nos. ML110130342, ML110130344, and ML110130348.

B.5.26 Mitigation Measures

Comment: RP024-005

The commenter stated that the mitigation measures described in the DSEIS were sometimes unclear, and the commenter suggested that pertinent mitigation measures be described separately from the respective potential impacts. The commenter also noted that it is important to state that the Applicant's proposed mitigation measures, in most cases, have been previously approved for other ISR facilities and projects. The commenter suggested that the Ross Project SEIS cite NUREG–1910 and its other supplements (i.e., other SEISs).

Response: *The NRC staff understands that a discussion of mitigation measures, separate from the potential impacts, could be beneficial and could allow SEIS readers to examine the individual mitigation measures all in one section. However, for this SEIS, the NRC staff chose to present the descriptions of mitigation measures together with the related potential impacts because mitigation measures informed the NRC staff's determination of impact magnitudes. This format provided a more clear and concise document overall. The commenter did not provide any specific examples of where the mitigation measures described in the DSEIS are unclear or where additional citations to the GEIS or the other SEISs would be helpful. Nonetheless, when the NRC staff prepared the FSEIS, the staff identified areas where the document could be enhanced as suggested by commenter; these sections were revised as appropriate.*

B.5.27 Environmental Justice

Comment: RP039-006

The commenter pointed out that Devils Tower is a sacred place for Native American Tribes. The commenter requested that special attention be paid to Native American treaty, cultural, historical, and religious concerns and asked that Devils Tower be considered an environmental-justice issue.

Response: *The NRC acknowledges that Devils Tower is sacred to Native Americans and that Tribal cultural traditions and religious beliefs should be honored. One of the principles of environmental justice is to meaningfully involve* all *people, regardless of race, color, national origin, or income, in the environmental issues that concern them. Observing this principle, the*

NRC staff has consulted with interested Tribes; the NRC staff have hosted formal, onsite consultation meetings on September 12 – 13 and November 2 – 3, 2011. As part of these consultation activities, several Tribes have identified the cultural importance of Devils Tower (also known as Bear Lodge). The Tribes have noted that Devils Tower continues to be a part of the Tribal cultural landscape vis-à-vis the Ross Project. Devils Tower was identified as such during the Tribal field surveys conducted by interested Tribes in May and June 2013, assisted by the NRC staff. No changes were made to the SEIS beyond the information provided in this response.

B.5.28 Editorial

B.5.28.1 Grammar and Typography Editorial

Comment: RP024-003

The commenter noted that the SEIS was inconsistent in its use of "would" versus "will," the latter of which is the correct term in the vast majority of cases.

Response: *The NRC staff disagrees that the word "will" is the appropriate verb tense for the SEIS. The outcome of the NEPA process is not known with absolute certainty until the process is complete and the EPA has rated the SEIS "satisfactory." Until then, the majority of the actions described in the SEIS are conditional (i.e., will not occur until the EPA has issued its opinion and the NRC staff has issued a Source and Byproduct Materials License to Strata) (NRC, 2014b). Thus, the SEIS uses "would" in almost all cases and, thus, no changes were made to the SEIS beyond the information provided in this response.*

Comment: RP024-067

The commenter noted that inconsistencies existed in the DSEIS's nomenclature use in discussing the actual license that would be issued by the NRC in response to Strata's license application. The commenter suggested using the term "Source and 11e.(2) Byproduct Material License" throughout the SEIS (NRC, 2014b).

Response: *The NRC staff agrees that various descriptors have been used in the SEIS to describe the license for which Strata submitted a license application. As discussed in the response to Comment RP024-004, the descriptor "11e.(2)" has not been used in the SEIS's final text. The NRC staff has used the plural structure (i.e., Material<u>s</u>) because the proposed License would govern both source material and byproduct material, where the latter is only for byproduct material, which would be generated during onsite uranium-recovery operations. In some cases, the descriptor might be different, if justified within the respective and specific context (e.g., the title for 10 CFR Part 40 remains "Domestic Licensing of Source Material" and has not been changed). The NRC staff has revised the SEIS so that the descriptor, "Source and Byproduct Materials License," is consistently used throughout the document.*

Comments: RP024-029; RP024-032; RP024-034; RP024-043; RP024-045; RP024-053; RP024-076; RP024-077; RP024-078; RP024-081; RP024-083; RP024-087; RP024-108; RP024-120; RP024-144; RP024-149; RP024-167; RP024-183; RP024-203; RP024-208; RP024-212; RP024-238; RP024-239; RP024-275; RP024-277; RP024-283; RP024-301; RP024-302; RP024-303; RP024-317; RP024-325; RP024-334; RP024-335; RP024-362;

RP024-365; RP024-368; RP024-370; RP024-382; RP024-393; RP024-398; RP024-405; RP024-408; RP024-409; RP024-426; RP024-428; RP024-456; RP024-476; RP024-480; RP024-484; RP024-485; RP024-489; RP024-498; RP024-508; RP024-512; RP024-513; RP024-514; RP024-515; RP024-531; RP024-549; RP024-571; RP024-574; RP024-580; RP024-595; RP024-596; RP024-597; RP024-599; RP024-601; RP024-603; RP024-608; RP024-615; RP024-627; RP024-635; RP024-640; RP024-645; RP024-646; RP024-654; RP024-657; RP024-658; RP024-661; RP024-662; RP024-663; RP024-664; RP024-665; RP024-666; RP024-668; RP024-697; RP024-702; RP024-704; RP024-705; RP024-706; RP024-710; RP024-718; RP024-728; RP024-729; RP024-730; RP024-731; RP024-735; RP035-030; RP035-031

Several commenters suggested corrections for typographical or grammatical errors in the SEIS.

Response: *The NRC staff verified all such changes and/or corrections for accuracy. When determined to be appropriate, the NRC staff incorporated such changes and/or corrections into the SEIS.*

B.5.28.2 Technical Editorial

Comments: RP017-005; RP017-007; RP024-006; RP024-007; RP024-008; RP024-009; RP024-010; RP024-011; RP024-012; RP024-014; RP024-015; RP024-016; RP024-017; RP024-018; RP024-021; RP024-022; RP024-023; RP024-026; RP024-027; RP024-028; RP024-033; RP024-036; RP024-038; RP024-039; RP024-044; RP024-046; RP024-047; RP024-048; RP024-049; RP024-050; RP024-051; RP024-052; RP024-055; RP024-059; RP024-060; RP024-061; RP024-062; RP024-063; RP024-064; RP024-065; RP024-069; RP024-070; RP024-073; RP024-075; RP024-079; RP024-082; RP024-089; RP024-090; RP024-091; RP024-092; RP024-093; RP024-094; RP024-095; RP024-097; RP024-098; RP024-099; RP024-101; RP024-102; RP024-103; RP024-104; RP024-106; RP024-109; RP024-110; RP024-111; RP024-113; RP024-114; RP024-116; RP024-117; RP024-119; RP024-121; RP024-122; RP024-123; RP024-124; RP024-125; RP024-126; RP024-127; RP024-128; RP024-129; RP024-130; RP024-131; RP024-136; RP024-137; RP024-138; RP024-139; RP024-145; RP024-147; RP024-148; RP024-150; RP024-151; RP024-153; RP024-154; RP024-155; RP024-156; RP024-157; RP024-158; RP024-164; RP024-174; RP024-178; RP024-179; RP024-185; RP024-186; RP024-187; RP024-188; RP024-189; RP024-193; RP024-195; RP024-196; RP024-197; RP024-198; RP024-200; RP024-201; RP024-204; RP024-207; RP024-213; RP024-214; RP024-215; RP024-217; RP024-219; RP024-223; RP024-224; RP024-225; RP024-226; RP024-227; RP024-228; RP024-229; RP024-230; RP024-231; RP024-232; RP024-233; RP024-234; RP024-235; RP024-236; RP024-237; RP024-241; RP024-242; RP024-243; RP024-244; RP024-245; RP024-246; RP024-249; RP024-250; RP024-251; RP024-252; RP024-253; RP024-255; RP024-256; RP024-257; RP024-258; RP024-259; RP024-260; RP024-261; RP024-262; RP024-263; RP024-264; RP024-265; RP024-266; RP024-267; RP024-268; RP024-269; RP024-270; RP024-272; RP024-273; RP024-274; RP024-276; RP024-278; RP024-279; RP024-280; RP024-281; RP024-282; RP024-284; RP024-285; RP024-286; RP024-287; RP024-288; RP024-289; RP024-290; RP024-291; RP024-292; RP024-294; RP024-295; RP024-296; RP024-297; RP024-298; RP024-299; RP024-300; RP024-304; RP024-310; RP024-311; RP024-312; RP024-313; RP024-314; RP024-315; RP024-318; RP024-320; RP024-323; RP024-324; RP024-326; RP024-327; RP024-328; RP024-329; RP024-330; RP024-332; RP024-333; RP024-336; RP024-337; RP024-339; RP024-340; RP024-341; RP024-342; RP024-343; RP024-344; RP024-345; RP024-346; RP024-347; RP024-348; RP024-349;

RP024-350; RP024-351; RP024-352; RP024-353; RP024-355; RP024-356; RP024-357; RP024-358; RP024-359; RP024-360; RP024-361; RP024-363; RP024-364; RP024-369; RP024-371; RP024-373; RP024-374; RP024-377; RP024-378; RP024-383; RP024-385; RP024-386; RP024-387; RP024-388; RP024-389; RP024-390; RP024-391; RP024-392; RP024-394; RP024-395; RP024-396; RP024-397; RP024-399; RP024-400; RP024-403; RP024-404; RP024-406; RP024-407; RP024-410; RP024-412; RP024-413; RP024-414; RP024-415; RP024-416; RP024-418; RP024-420; RP024-422; RP024-423; RP024-424; RP024-427; RP024-429; RP024-430; RP024-436; RP024-438; RP024-439; RP024-440; RP024-441; RP024-442; RP024-444; RP024-445; RP024-446; RP024-448; RP024-449; RP024-450; RP024-451; RP024-452; RP024-453; RP024-454; RP024-455; RP024-457; RP024-458; RP024-459; RP024-460; RP024-461; RP024-462; RP024-465; RP024-466; RP024-467; RP024-468; RP024-469; RP024-471; RP024-473; RP024-475; RP024-483; RP024-490; RP024-494; RP024-496; RP024-497; RP024-499; RP024-501; RP024-502; RP024-503; RP024-504; RP024-505; RP024-506; RP024-507; RP024-511; RP024-519; RP024-520; RP024-521; RP024-526; RP024-528; RP024-543; RP024-544; RP024-546; RP024-548; RP024-550; RP024-551; RP024-552; RP024-553; RP024-554; RP024-555; RP024-556; RP024-557; RP024-558; RP024-559; RP024-560; RP024-561; RP024-562; RP024-563; RP024-564; RP024-565; RP024-566; RP024-567; RP024-572; RP024-573; RP024-575; RP024-576; RP024-577; RP024-578; RP024-581; RP024-582; RP024-583; RP024-584; RP024-586; RP024-587; RP024-588; RP024-589; RP024-590; RP024-591; RP024-592; RP024-593; RP024-594; RP024-600; RP024-602; RP024-604; RP024-605; RP024-606; RP024-607; RP024-609; RP024-610; RP024-611; RP024-612; RP024-613; RP024-614; RP024-616; RP024-617; RP024-618; RP024-619; RP024-620; RP024-621; RP024-622; RP024-623; RP024-624; RP024-625; RP024-626; RP024-628; RP024-629; RP024-630; RP024-631; RP024-632; RP024-633; RP024-634; RP024-636; RP024-637; RP024-638; RP024-641; RP024-642; RP024-643; RP024-644; RP024-647; RP024-648; RP024-650; RP024-651; RP024-653; RP024-655; RP024-656; RP024-667; RP024-669; RP024-670; RP024-671; RP024-673; RP024-674; RP024-676; RP024-678; RP024-679; RP024-685; RP024-686; RP024-687; RP024-688; RP024-695; RP024-698; RP024-699; RP024-700; RP024-701; RP024-707; RP024-708; RP024-709; RP024-711; RP024-712; RP024-713; RP024-714; RP024-715; RP024-716; RP024-717; RP024-719; RP024-720; RP024-721; RP024-722; RP024-723; RP024-724; RP024-725; RP024-726; RP024-732; RP024-733; RP024-734; RP024-737; RP024-738; RP024-739; RP024-740; RP024-742; RP024-743; RP024-744; RP024-745; RP024-746; RP024-747; RP024-748; RP024-750; RP024-159; RP032-050; RP032-057; RP032-073; RP032-074; RP032-075; RP032-076; RP032-083; RP034-003; RP035-002; RP035-003; RP035-014; RP035-016; RP035-019; RP035-020; RP035-021; RP035-023; RP035-024; RP035-025; RP035-026; RP035-029; RP035-032; RP035-033; RP035-036; RP035-040; RP036-005; RP036-007; RP036-042

Several commenters suggested changes to the SEIS text to correct inaccuracies (such as inaccuracies in the NRC staff's incorporating information from the Strata's license application) and inconsistencies (such as inconsistencies with the Draft Source and Byproduct Materials License conditions) or proposed text to clarify and/or supplement information in the SEIS (such as additions or revisions to the SEIS text that would shed more light on the SEIS's analyses, conclusions, and recommendations) (NRC, 2014b).

Response: *The NRC staff verified for accuracy all proposed changes and suggestions and, when determined to be appropriate, the NRC incorporated such changes and additions into the SEIS.*

B.5.28.3 References

(US)NRC. "Draft Source and Byproduct Materials License, No. SUA-1601" Washington, DC: USNRC. 2014b. ADAMS Accession No. ML14002A111.

APPENDIX B1
ALTERNATE CONCENTRATION LIMITS

In-situ uranium recovery (ISR) facilities operate by an operator's first extracting uranium from specific areas called wellfields. After uranium recovery has ended, the ground water in the wellfields contain constituents that were mobilized by the lixiviant. Licensees shall commence aquifer restoration in each wellfield soon after the uranium recovery operations end (NRC, 2009d). Aquifer-restoration criteria for the site-specific post-licensing, pre-operational constituents are determined either for each individual well or as a wellfield average.

United States (U.S.). Nuclear Regulatory Commission (NRC) licensees are required to return water quality parameters to the standards in 10 CFR Part 40, Appendix A, Criterion 5B(5). As stated in the regulations: "5B(5)-At the point of compliance, the concentration of a hazardous constituent must not exceed—(a) The Commission approved background [in this SEIS, "post-licensing, pre-operational"] concentration of that constituent in the groundwater; (b) The respective value given in the table in paragraph 5C if the constituent is listed in the table and if the background [in this SEIS, "post-licensing, pre-operational"] level of the constituent is below the value listed; or (c) An alternate concentration limit (ACL) is established by the Commission."

For an ACL to be considered by the Commission, a licensee must submit a license amendment application to request an ACL. In this ACL license amendment request, the licensee must provide the basis for any proposed limits including consideration of practicable corrective actions that limits are as low as reasonably achievable (ALARA), and information on the factors the Commission must consider. The NRC will establish a site-specific ACL for a hazardous constituent as provided in paragraph 5B(5) if the NRC finds the proposed limit as ALARA, after considering practicable corrective actions, and determining that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the ACL is not exceeded.

To determine if the ACL does not pose a potential hazard to human health or the environment, NRC performs three risk assessments (NRC, 2003a). The first is a hazard assessment which evaluates the radiological dose and toxicity of the constituents in question and the risk to human health and environment. The second is an exposure assessment to examine the existing distribution of hazardous constituents, as well as potential sources for future releases and the potential consequences associated with the human and environmental exposure to the hazardous constituents. The last assessment is a corrective action assessment which evaluates 1) all applicant proposed corrective actions; 2) the technical feasibility of each proposed corrective actions; 3) the costs and benefits associated with each proposed corrective action; and 4) the preferred corrective action to achieve the hazardous constituent concentration which is protective of human health and the environment.

To perform these assessments, the NRC staff uses a rigorous review process. Licensees must provide a comprehensive ACL amendment that addresses surface-water and ground-water quality and expected impacts on human health and the environment. Such information required in an amendment request pursuant to 10 CFR Part 40, Appendix A, Criterion 5B(6) includes the following factors:

- Potential adverse effects on ground-water quality, considering the following:
  - The physical and chemical characteristics of the waste in the licensed site including its potential for migration
  - The hydrogeologic characteristics of the facility and surrounding land
  - The quantity of ground water and the direction of ground-water flow
  - The proximity and withdrawal rates of ground-water users
  - The current and future uses of ground water in the area
  - The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality
  - The potential for health risks caused by human exposure to waste constituents
  - The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents
  - The persistence and permanence of the potential adverse effects.
- Potential adverse effects on hydraulically connected surface water quality, considering the following:
  - The volume and physical and chemical characteristics of the waste in the licensed site
  - The hydrogeologic characteristics of the facility and surrounding land
  - The quantity and quality of ground water, and the direction of ground-water flow
  - The patterns of rainfall in the region
  - The proximity of the licensed site to surface waters
  - The current and future uses of surface waters in the area and any water quality standards established for those surface waters
  - The existing quality of surface water including other sources of contamination and the cumulative impact on surface water quality
  - The potential for health risks caused by human exposure to waste constituents
  - The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents
  - The persistence and permanence of the potential adverse effects.

Although State "class of use" standards are not recognized in the NRC's regulations as restoration standards, these standards can be considered as one factor in evaluating ACL requests for uranium-recovery facilities located in Wyoming. Furthermore, in considering ACL requests, the Commission places particular importance on protecting underground sources of drinking water (USDWs). The use of modeling and additional ground-water monitoring may be necessary to show that ACLs in ISR wellfields would not adversely impact USDWs. It must be demonstrated that the licensee has attempted to restore hazardous constituents in ground water to post-licensing, pre-operational values or an MCL—whichever level is higher.

Before an ISR licensee is allowed to extract uranium, the EPA under 40 CFR Part 146.4 and in accordance with the SDWA must issue an aquifer exemption covering the portion of the aquifer in which the uranium-bearing rock is located. The EPA cannot exempt the portion of the aquifer unless it is found that "it does not currently serve as a source of drinking water" and "cannot now and will not in the future serve as a source of drinking water." Due to these criteria, only impacts outside of the exempted aquifer are evaluated. In most cases, the water in aquifers adjacent to the uranium OZs does not meet drinking water standards. The Commission will not approve an ACL if it will impact any adjacent USDWs. Therefore, the impact of granting an ACL request is SMALL.

Further guidance for the NRC's evaluation of ACLs for uranium-recovery facilities is currently being developed for a revision of NUREG–1569 (NRC, 2003a). Existing guidance for the NRC's review of ACLs for conventional mills can be found in NUREG–1620, Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of UMTRCA (NRC, 2003c).

B1.1 References

(US)NRC. "Standard Review Plan for In Situ Leach Uranium Extraction License Applications, Final Report." NUREG–1569. Washington, DC: USNRC. 2003a. ADAMS Accession No. ML032250177.

(US)NRC. "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978. Final Report. " NUREG–1620. Washington, DC: USNRC. ADAMS Accession No. ML031550569.

(US)NRC. "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities. Volumes 1 and 2." NUREG–1910. Washington, DC: USNRC. 2009b. ADAMS Accession Nos. ML091480244 and ML091480188.

APPENDIX C
WATER-QUALITY DATA

Water-Quality Data

Sample Results

Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		12-18SA	12-18SA	12-18SA	12-18SA	12-18SA	12-18SA	12-18SA	12-18SA	12-18SM	12-18SM
Sample Date		3/23/10	6/5/10	8/11/10	10/4/10	2/15/11	6/17/11	9/12/11	11/8/11	3/11/10	6/18/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	201	303	151	290	286	299	299	202	531	528
Ammonia	mg/L	0.4	0.3	0.5	0.4	0.4	0.3	-0.1	0.2	-0.1	-0.1
Fluoride	mg/L	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	2.1	1.7
Laboratory conductivity	µmhos/cm	729	829	554	835	795	690	897	711	1420	1440
Laboratory pH	s.u.	9.2	8.4	9.8	8.2	8.1	8.3	8.4	8.6	8.8	8.8
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	500	550	370	490	560	540	540	420	970	980
Calcium	mg/L	20	43	3	46	54	53	54	26	3	3
Magnesium	mg/L	22	31	13	33	33	35	33	24	1	1
Potassium	mg/L	22	16	20	16	16	16	17	20	8	5
Sodium	mg/L	101	97	89	84	90	89	88	78	341	328
Bicarbonate	mg/L	172	352	84	354	349	361	361	218	577	578
Carbonate	mg/L	36	8	49	-5	-5	-5	-5	14	35	33
Chloride	mg/L	12	12	24	11	13	14	14	14	5	3
Sulfate	mg/L	163	142	94	130	157	143	146	124	236	218
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	0.18	0.3	0.28	0.08	-0.05	-0.05	-0.05
Iron, total	mg/L	0.33	0.34	0.42	0.37	0.41	1.12	1.02	0.32	0.09	0.06
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.04	0.06	0.03	0.08	0.07	0.13	0.15	0.04	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	0.06	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.008	-0.005	-0.005
Silver, dissolved	mg/L			0.006	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	0.003	-0.001	-0.001	-0.001	-0.001	-0.0003	-0.0003	0.0008	-0.001	-0.001
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	0.0013			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Lead 210, suspended	pCi/L		-1	-1			-1	1.1			-1
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	0.28	0.24	0.2	0.4	0.3	0.2	0.3	-0.2	-0.2	0.24
Ra-226, suspended	pCi/L		0.24	-0.2			-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	-1	1	-1	1.8	1	-1	1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	-2	2.7	-2	4	-2	-2	-3	-2	-2	2.1
Gross Beta	pCi/L	15.8	13	13.5	11.2	13.1	12.5	10.1	17.6	3.3	-6.8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detection limit
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		12-18SM	12-18SM	12-18SM	12-18SM	12-18SM	12-18SM	12-18OZ	12-18OZ	12-18OZ	12-18OZ
Sample Date		8/10/10	10/6/10	2/15/11	6/17/11	9/8/11	10/23/11	3/10/10	6/18/10	7/22/10	10/6/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	532	534	534	532	530	528	531	541	533	545
Ammonia	mg/L	0.2	0.4	0.3	0.1	0.2	0.2	0.3	0.2	0.4	0.6
Fluoride	mg/L	1.9	2.1	1.9	2	1.5	2	1.1	1.2	0.9	1.2
Laboratory conductivity	µmhos/cm	1430	1450	1350	1200	1520	1580	1900	1640	2160	1700
Laboratory pH	s.u.	8.7	8.8	8.8	8.8	8.8	8.8	8.6	8.6	8.6	8.7
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	980	970	990	970	940	940	1340	1140	1490	1140
Calcium	mg/L	3	3	3	3	3	2	6	4	7	4
Magnesium	mg/L	1	1	1	1	1	1	2	1	2	1
Potassium	mg/L	6	6	4	4	4	4	5	4	4	4
Sodium	mg/L	354	371	374	371	374	385	438	416	516	368
Bicarbonate	mg/L	598	573	593	579	590	583	607	624	603	601
Carbonate	mg/L	25	38	28	34	28	30	20	18	24	31
Chloride	mg/L	3	4	4	5	4	4	7	4	6	4
Sulfate	mg/L	212	216	242	221	206	213	480	295	543	320
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	0.05	-0.05	0.06	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.07	0.06	0.29	0.6	0.07	0.91	0.07	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	0.004	-0.003	-0.003	-0.003	0.011	-0.003			-0.003	-0.003
Uranium, dissolved	mg/L	-0.001	-0.001	-0.001	-0.0003	-0.0003	-0.0003	0.07	0.033	0.069	0.033
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003			-0.001	-0.001	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	-1			4.83	4.89	
Lead 210, suspended	pCi/L	-1			-1	1.1			1.7	1.87	
Polonium 210, dissolved	pCi/L	-1			-1	-1			22.9	22.2	
Polonium 210, suspended	pCi/L	-1			-1	-1			35	17.2	
Ra-226, dissolved	pCi/L	-0.2	0.2	-0.2	-0.2	-0.2	-0.2	8.16	5	12.01	5.8
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	2.27	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	0.4			-0.2	-0.2	
Gross Alpha	pCi/L	-2	-2	-5	-2	-5	-3	222	157.5	177	93.9
Gross Beta	pCi/L	-3	9.4	-8	-4	-7	-5	26.5	24.1	43.2	21.7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		12-18OZ	12-18OZ	12-18OZ	12-18OZ	12-18DM	12-18DM	12-18DM	12-18DM	12-18DM	12-18DM
Sample Date		2/15/11	6/8/11	9/8/11	10/23/11	3/10/10	6/18/10	8/10/10	10/6/10	2/15/11	6/17/11
Parameter**	**Units**	Sample Results									
Alkalinity (as CaCO3)	mg/L	552	550	538	543	466	415	418	411	426	406
Ammonia	mg/L	0.4	-0.1	0.3	-0.1	2.4	1.4	0.9	0.6	0.7	0.5
Fluoride	mg/L	1.1	1.3	1.2	0.9	1	0.9	1	1.2	1	1.2
Laboratory conductivity	µmhos/cm	1550	1420	1740	1800	2400	2290	2150	2180	2080	1740
Laboratory pH	s.u.	8.7	8.8	8.7	8.7	11.5	11.2	10	9.7	9.5	9.4
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1150	1090	1090	1050	1140	1190	1260	1240	1290	1260
Calcium	mg/L	4	4	3	3	8	3	1	1	2	2
Magnesium	mg/L	1	1	1	1	-1	-1	-1	-1	-1	-1
Potassium	mg/L	4	4	3	4	39	31	23	16	15	13
Sodium	mg/L	453	421	444	434	427	405	470	476	541	521
Bicarbonate	mg/L	626	594	609	610	-5	-5	159	256	324	336
Carbonate	mg/L	24	38	23	26	171	200	172	121	96	78
Chloride	mg/L	4	5	5	6	376	362	395	402	513	508
Sulfate	mg/L	337	297	322	294	30	37	29	28	25	29
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	0.6	0.5	0.3	0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	0.007	0.008	0.007	0.005	0.009	0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.5	0.6	0.6	0.6	0.4	0.5	0.7	0.7	0.8	0.8
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	-0.05	-0.05	-0.05	-0.05	0.15	0.06	0.05	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	0.06	0.04	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	0.012	0.017	0.013	0.008	0.02	0.015
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.031	0.0268	0.0146	0.0205	-0.001	-0.001	-0.001	-0.001	-0.001	-0.0003
Uranium, suspended	mg/L		-0.0003	-0.0003			-0.001	-0.001			-0.0003
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		4.2	8.7			-1	-1			-1
Lead 210, suspended	pCi/L		1.6	1.5			-1	-1			-1
Polonium 210, dissolved	pCi/L		6.5	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		7.9	25.1			-1	-1			-1
Ra-226, dissolved	pCi/L	5.2	5.3	4.7	3.8	0.28	0.22	-0.2	0.4	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	1.4	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	64.1	20.7	76.6	66.7	4.7	3.2	-2	-2	-5	-4
Gross Beta	pCi/L	14.4	10.7	20	13.8	24.1	18.8	12	11.8	-8	-8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	Sample Station Name	Sample Date								
		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
		12-18DM	12-18DM	14-18SA	14-18SA	14-18SA	14-18SA	14-18SA	14-18SA	14-18SA	14-18SA
		9/8/11	10/23/11	3/24/10	6/5/10	7/22/10	10/4/10	2/18/11	6/17/11	9/12/11	11/8/11
Alkalinity (as CaCO3)	mg/L	419	441	453	471	463	478	289	329	476	221
Ammonia	mg/L	0.5	0.1	-0.1	-0.1	0.1	0.2	0.1	-0.1	-0.1	0.2
Fluoride	mg/L	1.2	1.2	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4
Laboratory conductivity	µmhos/cm	2290	2390	1690	1750	1800	1860	1460	1280	1940	1580
Laboratory pH	s.u.	9.3	9	9.3	8.6	8.5	8.4	10.2	9.4	8.6	11
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1240	1240	1160	1230	1200	1220	1010	1070	1160	820
Calcium	mg/L	2	3	14	17	18	22	6	7	22	2
Magnesium	mg/L	-1	-1	8	9	10	12	2	7	13	-1
Potassium	mg/L	12	11	17	11	11	13	19	14	12	18
Sodium	mg/L	530	557	393	361	391	400	335	347	416	306
Bicarbonate	mg/L	379	438	368	526	544	572	94	273	552	-5
Carbonate	mg/L	65	50	91	24	10	5	127	64	14	83
Chloride	mg/L	476	484	80	86	68	67	68	77	84	68
Sulfate	mg/L	23	15	314	343	315	327	311	327	347	303
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.6
Arsenic, dissolved	mg/L	0.007	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.9	0.8	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	0.09	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	-0.05	-0.05	0.1	0.14	0.14	0.15	0.11	0.16	0.21	0.17
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	0.02	0.04	0.04	0.07	-0.02	0.02	0.06	0.05
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	0.03	-0.02	-0.02	-0.02	0.07	0.03	-0.02	0.04
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.023	0.006	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	0.005	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	-0.0003	-0.0003	0.007	0.007	0.007	0.007	0.0011	0.0046	0.0067	0.0003
Uranium, suspended	mg/L	-0.0003			-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	0.04	0.03	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	-1			-1	1.4	
Lead 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	0.27	0.26	0.5	-0.2	-0.2	0.3	0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	1.4	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	-4	-3	5.1	7.4	7.33	13.8	-4	4.2	-6	-3
Gross Beta	pCi/L	-7	-8	12.1	5.9	5.99	7.9	13.7	10.6	-8	13.1

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	14-18SM	14-18SM	14-18SM	14-18SM	14-18SM	14-18SM	14-18SM	14-18SM	14-18OZ	14-18OZ
	Sample Date	3/29/10	6/16/10	7/24/10	10/12/10	2/22/11	6/7/11	8/18/11	10/22/11	3/25/10	6/16/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	551	556	581	582	581	583	579	579	471	493
Ammonia	mg/L	-0.1	-0.1	0.1	0.2	0.1	-0.1	-0.1	-0.1	0.4	0.5
Fluoride	mg/L	1.6	1.5	1.6	1.5	1.6	1.6	1.5	1.6	0.5	0.4
Laboratory conductivity	µmhos/cm	1480	1520	1560	1560	1470	1400	1710	1720	2620	2810
Laboratory pH	s.u.	9.2	9.1	8.9	9	9	8.8	9	8.8	8.9	8.6
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1020	1040	1010	1000	1050	1110	1060	1030	2020	2070
Calcium	mg/L	2	2	2	2	2	2	1	2	5	7
Magnesium	mg/L	-1	-1	1	1	1	1	-1	1	2	3
Potassium	mg/L	6	8	7	8	7	7	6	6	17	11
Sodium	mg/L	350	352	373	360	412	399	412	416	624	639
Bicarbonate	mg/L	526	566	603	599	597	622	597	628	478	556
Carbonate	mg/L	72	55	52	54	55	44	54	39	48	23
Chloride	mg/L	4	3	2	2	3	3	4	4	10	10
Sulfate	mg/L	232	241	238	230	241	227	283	234	897	859
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	-0.1
Arsenic, dissolved	mg/L	0.012	0.009	0.007	0.005	-0.005	0.008	0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4	0.5	0.5	0.6	0.5	0.6	0.5	0.6	0.4	0.4
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.69	-0.05
Iron, total	mg/L	0.06	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	3.38	0.33
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.06	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	-0.001	-0.001	-0.001	-0.001	0.0008	0.0007	0.0006	-0.0003	0.096	0.109
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.01
Lead 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Lead 210, suspended	pCi/L		-1	-1			-1	-1			1.18
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			1.79
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			1.05
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	0.4	-0.2	-0.2	-0.2	2.31	3.74
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			0.28
Ra-228, dissolved	pCi/L	-1	1.29	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	2.8	3.1	-3.5	11.2	-5	-2	-6	-5	173	191
Gross Beta	pCi/L	7.2	7	-6.8	12.4	-8	4.4	-8	-7	40.2	37.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	14-18OZ	14-18OZ	14-18OZ	14-18OZ	14-18OZ	14-18OZ	14-18DM	14-18DM	14-18DM	14-18DM
	Sample Date	7/14/10	10/11/10	2/22/11	6/6/11	9/6/11	10/22/11	3/29/10	6/16/10	7/24/10	10/12/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	520	518	510	526	509	525	439	422	416	422
Ammonia	mg/L	0.6	0.6	0.5	0.5	0.3	-0.1	0.6	0.4	0.5	0.5
Fluoride	mg/L	0.5	0.4	0.5	0.5	0.4	0.4	1.1	1.1	1.2	1.1
Laboratory conductivity	µmhos/cm	2780	2730	2550	2300	2890	2980	2030	2170	2190	2150
Laboratory pH	s.u.	8.6	8.6	8.6	8.5	8.7	8.6	10	9.5	9	9.2
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1980	1930	2050	1980	1980	1900	1220	1260	1220	1240
Calcium	mg/L	8	9	9	10	11	10	2	2	3	3
Magnesium	mg/L	3	3	3	3	3	3	-1	-1	-1	-1
Potassium	mg/L	7	6	7	7	7	6	34	22	15	13
Sodium	mg/L	644	600	668	696	718	653	460	447	468	454
Bicarbonate	mg/L	591	593	584	614	567	585	188	337	399	391
Carbonate	mg/L	21	19	19	13	26	27	171	87	54	61
Chloride	mg/L	10	9	11	10	11	11	449	392	437	438
Sulfate	mg/L	937	826	870	854	823	820	23	4	1	-1
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.008	0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4	0.5	0.4	0.5	0.5	0.4	0.6	0.7	0.8	0.9
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	-0.05	-0.05
Iron, total	mg/L	0.1	0.52	0.12	-0.05	0.08	-0.05	2.92	0.72	0.33	0.15
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	0.03	-0.02	-0.02	0.02	-0.02	0.05	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.014	0.012	0.012	0.01
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003
Uranium, dissolved	mg/L	0.109	0.085	0.0757	0.0992	0.106	0.104	-0.001	-0.001	-0.001	-0.001
Uranium, suspended	mg/L	0.003			-0.0003	-0.0003			0.001	-0.001	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.02	0.01
Lead 210, dissolved	pCi/L	1.79			1.3	13.6			1.1	-1	
Lead 210, suspended	pCi/L	1.04			2.6	2			-1	-1	
Polonium 210, dissolved	pCi/L	5.04			1.5	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			2.7	-1			-1	-1	
Ra-226, dissolved	pCi/L	4.03	4.9	5.1	3.3	4.8	3.7	0.35	0.21	-0.2	0.4
Ra-226, suspended	pCi/L	4.24			-0.2	0.4			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	1.56
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	0.95			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	165.3	183	131	158	161	188	13.7	2.1	-3.1	28.3
Gross Beta	pCi/L	39.6	27.6	16.3	34.6	36	46.8	32.3	17.2	8.24	41

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	14-18DM	14-18DM	14-18DM	14-18DM	21-19SA	21-19SA	21-19SA	21-19SA	21-19SA	21-19SA
	Sample Date	2/22/11	6/7/11	8/18/11	10/22/11	3/24/10	6/18/10	7/22/10	10/4/10	2/18/11	6/17/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	414	411	404	405	374	374	367	399	390	374
Ammonia	mg/L	0.5	0.4	0.4	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	1.2	1.1	1.1	1.3	0.4	0.4	0.3	0.4	0.4	0.8
Laboratory conductivity	µmhos/cm	2040	1900	2320	2350	911	937	968	974	901	853
Laboratory pH	s.u.	9.3	9.1	9.1	8.9	8.2	8.2	8.1	8.2	8.1	8.2
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	1.1	-0.1	1	0.3	-0.1	-0.1
Total Dissolved Solids	mg/L	1260	1270	1240	1150	620	640	620	610	640	680
Calcium	mg/L	3	3	3	3	31	26	36	30	27	37
Magnesium	mg/L	-1	-1	-1	-1	13	11	15	13	11	16
Potassium	mg/L	12	11	9	9	7	9	7	8	8	8
Sodium	mg/L	513	544	542	529	160	171	165	177	200	192
Bicarbonate	mg/L	366	383	396	427	456	456	447	487	476	457
Carbonate	mg/L	68	58	48	33	-5	-5	-5	-5	-5	-5
Chloride	mg/L	513	528	526	508	19	17	18	17	22	28
Sulfate	mg/L	-1	-1	-1	-1	112	107	118	91	99	131
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	0.007	0.009	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.8	0.8	0.8	0.8	-0.1	0.1	0.1	0.1	0.1	0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	0.66	-0.05
Iron, total	mg/L	0.08	-0.05	0.07	-0.05	0.08	5.68	0.16	0.37	2.78	7.87
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	0.19	0.36	0.18	0.2	0.19	0.16
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.016	0.026	0.028	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0006	-0.0003	-0.0003	-0.0003	0.007	0.004	0.006	0.005	0.0026	0.004
Uranium, suspended	mg/L		-0.0003	-0.0003			-0.001	-0.001			-0.0003
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	0.02	-0.01	0.02	1.32	0.09	-0.01	0.05	0.05
Lead 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Lead 210, suspended	pCi/L		-1	-1			-1	-1			1.4
Polonium 210, dissolved	pCi/L		-1	1.3			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	0.7	-0.2	-0.2	-0.2	0.41	0.24	0.23	0.3	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			0.24	-0.2			0.2
Ra-228, dissolved	pCi/L	-1	1	-1	1.7	-1	-1	-1	1.2	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	-4	-4	-6	-4	6.5	6.4	6.16	6.7	5.1	3.3
Gross Beta	pCi/L	7.2	-7	-7	-7	7.4	10	6.99	5.3	-7	7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		21-19SA	21-19SA	21-19SM	21-19SM	21-19SM	21-19SM	21-19SM	21-19SM	21-19SM	21-19SM
Sample Date		9/12/11	11/8/11	3/25/10	5/19/10	8/5/10	10/14/10	2/23/11	5/7/11	9/6/11	10/20/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	369	311	572	602	647	633	685	628	622	619
Ammonia	mg/L	-0.1	-0.1	-0.1	0.2	1.1	0.6	0.3	0.1	-0.1	0.2
Fluoride	mg/L	0.3	0.5	1	1	1.1	1.1	1.1	1	1.1	1.2
Laboratory conductivity	µmhos/cm	1130	1010	1770	1970	2000	1960	1940	1740	1680	2070
Laboratory pH	s.u.	8.4	8.4	9.6	9.3	9.9	9.6	9.9	9.4	9.1	8.9
Nitrate/Nitrite	mg/L	0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	680	590	1270	1330	1310	1300	1340	1310	1270	1270
Calcium	mg/L	37	20	2	2	1	1	1	1	1	1
Magnesium	mg/L	15	11	-1	-1	-1	-1	-1	-1	1	1
Potassium	mg/L	9	7	32	31	47	37	43	28	20	19
Sodium	mg/L	204	188	426	439	451	447	491	480	516	510
Bicarbonate	mg/L	440	361	399	532	347	491	365	560	634	643
Carbonate	mg/L	-5	9	146	99	218	138	231	101	61	56
Chloride	mg/L	34	31	3	8	3	2	3	4	4	4
Sulfate	mg/L	134	141	383	396	336	335	350	366	342	359
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	0.023	0.009	0.009	0.006	-0.005	0.006	0.006	0.006
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.1	0.1	0.2	0.5	0.6	0.6	0.6	0.6	0.6	0.6
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	0.11	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	3.65	3.3	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.09	0.05	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.006
Silver, dissolved	mg/L	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0049	0.0017	0.003	0.003	0.004	0.003	0.0021	0.0012	0.0006	0.0005
Uranium, suspended	mg/L	-0.0003			-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.04	-0.01	-0.01	-0.01	0.02	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	1.1			-1	-1			-1	1.5	
Lead 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	0.4	-0.2	-0.2	-0.2	-0.2	-0.2	3.7	-0.2	-0.2	0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	5.1	-3	3.1	5.4	6.6	12.2	-5	-3	-6	-4
Gross Beta	pCi/L	6.4	5.2	22.2	19	29.8	42.5	22.9	12.6	12.5	14.2

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Parameter**	Units	Sample Results									
Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		21-19OZ	21-19OZ	21-19OZ	21-19OZ	21-19OZ	21-19OZ	21-19OZ	21-19OZ	21-19DM	21-19DM
Sample Date		3/25/10	5/19/10	7/16/10	10/11/10	2/23/11	5/7/11	8/17/11	10/20/11	3/24/10	5/19/10
Alkalinity (as CaCO3)	mg/L	529	520	529	535	537	532	523	527	408	413
Ammonia	mg/L	0.3	0.5	0.4	0.5	0.4	0.4	0.3	0.5	0.6	0.5
Fluoride	mg/L	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	1.2	1.1
Laboratory conductivity	µmhos/cm	2190	2370	2280	2300	2200	2040	2540	2540	2000	2150
Laboratory pH	s.u.	8.7	8.6	8.5	8.6	8.6	8.7	8.7	8.7	9.7	9.4
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1600	1670	1620	1590	1680	1640	1620	1630	1200	1250
Calcium	mg/L	6	7	7	7	7	7	7	7	2	3
Magnesium	mg/L	2	2	2	2	2	2	2	2	-1	-1
Potassium	mg/L	5	6	5	6	5	6	5	5	23	21
Sodium	mg/L	537	531	574	516	618	602	598	577	463	522
Bicarbonate	mg/L	586	603	609	615	585	588	586	589	246	338
Carbonate	mg/L	29	16	18	19	35	30	26	26	124	82
Chloride	mg/L	7	9	8	7	9	9	9	10	473	535
Sulfate	mg/L	634	678	667	605	639	650	650	623	11	4
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.2
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.006	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.8
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.06	0.1
Iron, total	mg/L	0.18	0.07	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.73	0.87
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.03
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.014	0.014
Silver, dissolved	mg/L			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	0.017	0.008	0.024	0.005	0.005	0.0055	0.0071	0.0061	-0.001	-0.001
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	0.02	-0.01	-0.01	-0.01	-0.01	0.02	0.01
Lead 210, dissolved	pCi/L		-1	1.35			-1	1.9			1.16
Lead 210, suspended	pCi/L		-1	32.2			-1	1.5			1.25
Polonium 210, dissolved	pCi/L		-1	3.74			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	25.4			1.3	-1			-1
Ra-226, dissolved	pCi/L	0.89	0.93	0.71	0.8	0.7	0.7	0.6	0.9	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			0.24
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	33.5	19	47.7	18.4	-5	13.8	11.7	11.2	-2	2.3
Gross Beta	pCi/L	9.2	9.1	17.1	7.1	-7	-7	8.1	-8	16.2	13

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	Sample Station Name	Sample Date									
		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
		21-19DM	21-19DM	21-19DM	21-19DM	21-19DM	21-19DM	34-18SM	34-18SM	34-18SM	34-18SM
		8/5/10	10/14/10	2/23/11	5/7/11	9/6/11	10/20/11	3/17/10	5/18/10	8/4/10	10/11/10
Alkalinity (as CaCO3)	mg/L	429	431	414	413	409	413	521	486	484	458
Ammonia	mg/L	0.2	0.9	0.3	0.3	0.3	0.5	1.9	1.4	1.2	1
Fluoride	mg/L	1.2	1.2	1.2	1.1	1.2	1.1	1.4	1.3	1.2	0.9
Laboratory conductivity	µmhos/cm	2130	2170	2040	1920	2240	2340	2240	2190	2070	1800
Laboratory pH	s.u.	9.2	9.1	8.9	8.9	8.8	8.7	11.6	11.5	11.4	10.5
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1240	1250	1270	1220	1200	1240	1040	1100	1060	1140
Calcium	mg/L	3	3	3	4	4	4	2	1	1	-1
Magnesium	mg/L	-1	-1	-1	1	1	-1	-1	-1	-1	-1
Potassium	mg/L	17	14	11	10	8	8	31	28	26	20
Sodium	mg/L	467	449	516	509	496	538	359	342	360	383
Bicarbonate	mg/L	398	426	433	445	455	460	-5	-5	-5	51
Carbonate	mg/L	62	49	36	29	22	22	168	173	189	250
Chloride	mg/L	425	438	530	555	501	504	6	5	4	3
Sulfate	mg/L	2	-1	-1	-1	-1	-1	293	295	304	367
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	0.005	0.007	-0.005	0.009	0.011	0.012	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.8	0.9	0.8	0.8	0.8	0.9	0.2	0.2	0.3	0.4
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.17	0.09	0.05	0.14	0.11	0.08	0.07	0.12	0.11	0.07
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	0.03	0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.009	0.013	0.018	0.021	0.025	0.007	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003			0.004	-0.003
Uranium, dissolved	mg/L	-0.001	-0.001	-0.0003	-0.0003	0.0005	-0.0003	-0.001	-0.001	-0.001	-0.001
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003			-0.001	-0.001	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	0.02	-0.01	-0.01	-0.01	0.03	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Lead 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	1.3	-1	2.2	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	3.53	4.5	-5	-4	-6	-6	-2	-2	-3.5	-2
Gross Beta	pCi/L	8.33	9.2	-8	7	-8	-8	18.7	17.3	16.5	11

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
		Sample Station Name	34-18SM	34-18SM	34-18SM	34-18SM	34-18OZ	34-18OZ	34-18OZ	34-18OZ	34-18OZ	34-18OZ
		Sample Date	2/16/11	5/6/11	8/17/11	10/19/11	3/29/10	5/18/10	7/13/10	10/7/10	2/16/11	4/29/11
Alkalinity (as CaCO3)	mg/L		558	559	540	537	496	485	497	504	507	502
Ammonia	mg/L		0.5	0.3	-0.1	-0.1	0.4	0.4	0.4	0.7	0.5	0.3
Fluoride	mg/L		0.9	0.9	1.1	1.1	0.6	0.6	0.5	0.6	0.5	0.5
Laboratory conductivity	µmhos/cm		1890	1720	2120	2080	2070	2220	2260	2230	2070	2090
Laboratory pH	s.u.		9.9	9.7	9.6	9.4	9	8.7	8.4	8.7	8.6	8.6
Nitrate/Nitrite	mg/L		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.3	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L		1300	1330	1310	1310	1530	1560	1620	1560	1540	1560
Calcium	mg/L		1	2	1	2	4	6	6	6	7	8
Magnesium	mg/L		-1	1	1	-1	2	2	2	2	2	3
Potassium	mg/L		21	18	15	15	8	6	5	6	7	6
Sodium	mg/L		486	477	507	520	542	486	557	481	580	581
Bicarbonate	mg/L		299	408	438	429	499	540	591	559	587	571
Carbonate	mg/L		188	135	114	111	52	26	8	28	15	21
Chloride	mg/L		3	4	5	5	8	8	8	6	7	7
Sulfate	mg/L		418	433	458	410	606	670	593	578	631	647
Aluminum, dissolved	mg/L		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L		0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.5	0.5
Cadmium, dissolved	mg/L		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L		-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L		0.12	0.13	0.1	0.25	1.02	0.1	-0.05	-0.05	-0.05	0.15
Lead, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L		-0.02	-0.02	-0.02	-0.02	0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L		-0.005	-0.005	-0.005	0.009	-0.005	-0.005	-0.005	0.009	-0.005	-0.005
Silver, dissolved	mg/L		-0.003	-0.003	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L		0.0009	0.0007	0.0008	0.0011	0.062	0.059	0.046	0.041	0.0427	0.0376
Uranium, suspended	mg/L			-0.0003	-0.0003			-0.001	-0.001			-0.0003
Vanadium, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01
Lead 210, dissolved	pCi/L			-1	-1			1.88	3.02			3.1
Lead 210, suspended	pCi/L			-1	-1			3.88	1.66			5.8
Polonium 210, dissolved	pCi/L			-1	-1			4.77	8.73			5.6
Polonium 210, suspended	pCi/L			-1	-1			13.38	6.93			26.6
Ra-226, dissolved	pCi/L		-0.2	-0.2	-0.2	-0.2	5.97	9.06	9.68	8.8	9.8	10
Ra-226, suspended	pCi/L			-0.2	-0.2			0.49	-0.2			0.6
Ra-228, dissolved	pCi/L		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L			-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L		-4	-4	-6	-6	175.7	111.1	76	93.8	78.6	90
Gross Beta	pCi/L		13.2	10.4	8.4	-8	43.1	35.2	23.9	26.7	17.7	15.3

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	Sample Station Name	Sample Date									
		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
		34-18OZ	34-18OZ	34-18DM	34-18DM	34-18DM	34-18DM	34-18DM	34-18DM	34-18DM	34-18DM
		8/16/11	10/19/11	3/17/10	5/18/10	8/4/10	10/11/10	2/16/11	5/6/11	8/17/11	10/19/11
Alkalinity (as CaCO3)	mg/L	500	507	498	336	360	427	444	458	453	455
Ammonia	mg/L	0.3	0.2	3.9	0.9	1.8	0.6	0.4	0.4	0.3	-0.1
Fluoride	mg/L	0.6	0.5	1.2	1.1	1.2	1	1	1.1	1.3	1.1
Laboratory conductivity	µmhos/cm	2380	2430	2170	2040	1980	2210	2130	2010	2500	2530
Laboratory pH	s.u.	8.7	8.7	11.7	10	10	9.3	9.1	9.1	8.9	8.8
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1530	1540	870	1160	1110	1300	1320	1320	1310	1540
Calcium	mg/L	7	6	4	2	2	2	2	3	2	3
Magnesium	mg/L	2	2	-1	-1	-1	-1	-1	1	-1	1
Potassium	mg/L	5	6	44	21	21	15	15	12	11	10
Sodium	mg/L	562	568	302	473	405	452	498	554	556	540
Bicarbonate	mg/L	564	561	-5	133	134	374	429	453	481	488
Carbonate	mg/L	21	28	128	137	150	72	56	52	35	33
Chloride	mg/L	7	8	139	523	371	422	526	576	575	547
Sulfate	mg/L	661	591	29	12	15	6	4	-1	1	1
Aluminum, dissolved	mg/L	-0.1	-0.1	0.4	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	0.007	0.007	0.008	-0.005	0.006	0.005	0.008	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.5	0.5	0.3	0.5	0.6	0.8	0.9	1	0.9	1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	0.07	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	-0.05	-0.05	0.39	0.11	0.29	-0.05	-0.05	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	0.05	0.02	0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	0.008	0.009	0.006	0.01	0.022	0.023	0.029	0.007
Silver, dissolved	mg/L	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0419	0.0355	-0.001	0.003	-0.001	-0.001	-0.0003	-0.0003	-0.0003	-0.0003
Uranium, suspended	mg/L	-0.0003			-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	0.09	0.02	-0.01	0.04	0.01	-0.01	0.02	-0.01
Lead 210, dissolved	pCi/L	1.8			-1	-1			-1	-1	
Lead 210, suspended	pCi/L	9.1			-1	-1			-1	-1	
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	8.3	12.1	-0.2	-0.2	-0.2	0.3	-0.2	0.2	-0.2	0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	1.1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	97.5	105	-2	-2	-3.5	3.1	-4	-4	-4	-5
Gross Beta	pCi/L	23.2	25.1	32.6	13.1	10.1	6.6	-7	-7	-8	-8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

	Sample Results										
	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	34-7SA	34-7SA	34-7SA	34-7SA	34-7SA	34-7SA	34-7SA	34-7SA	34-7SM	34-7SM
	Sample Date	3/25/10	6/5/10	7/22/10	10/4/10	2/15/11	6/17/11	9/12/11	11/8/11	3/30/10	5/20/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	497	511	531	506	435	396	342	365	595	628
Ammonia	mg/L	-0.1	-0.1	-0.1	0.4	0.6	0.6	0.4	0.3	-0.1	0.2
Fluoride	mg/L	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.9	1
Laboratory conductivity	µmhos/cm	1160	1200	1270	1190	1010	882	1080	1020	1650	1840
Laboratory pH	s.u.	9.1	9.1	9.1	10	10.3	10.2	10.4	10.6	9.4	9
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	770	810	820	690	640	580	580	540	1150	1200
Calcium	mg/L	2	2	2	3	4	2	2	2	1	2
Magnesium	mg/L	-1	1	2	2	2	-1	2	-1	-1	1
Potassium	mg/L	10	11	11	13	9	7	7	7	14	13
Sodium	mg/L	274	266	299	259	256	234	232	213	426	417
Bicarbonate	mg/L	484	516	513	223	126	124	77	-5	508	631
Carbonate	mg/L	60	53	66	193	199	177	168	218	107	66
Chloride	mg/L	3	3	2	2	2	3	3	3	4	7
Sulfate	mg/L	134	133	137	98	95	90	124	84	312	312
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.016	0.011
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.4	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	0.07	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	-0.05	-0.05	-0.05	0.15	0.06	0.8	0.6	0.88	0.8	0.11
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.03	0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	0.0005	-0.0003	-0.0003	-0.001	0.001
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		-1	-1			-1	-1			1.34
Lead 210, suspended	pCi/L		-1	-1			-1	-1			-1
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.21	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			0.28
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	-2	3.8	2.65	2.4	-2	-2	-3	-3	4.7	6.2
Gross Beta	pCi/L	7.6	7.7	7.27	7.1	6.2	4.1	4.6	5.4	8.7	10.3

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	34-7SM	34-7SM	34-7SM	34-7SM	34-7SM	34-7SM	34-7OZ	34-7OZ	34-7OZ	34-7OZ
	Sample Date	8/10/10	10/13/10	2/14/11	6/8/11	9/7/11	10/24/11	3/30/10	5/20/10	7/8/10	10/13/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	647	658	672	677	683	685	532	522	556	568
Ammonia	mg/L	0.2	0.5	0.3	-0.1	-0.1	0.3	0.4	0.5	0.5	0.8
Fluoride	mg/L	0.9	0.9	0.8	1.1	1	1	0.4	0.5	0.4	0.4
Laboratory conductivity	µmhos/cm	1800	1830	1730	1620	1980	2040	2130	2290	2250	2190
Laboratory pH	s.u.	9	8.9	8.8	8.8	8.8	8.8	8.7	8.7	8.4	8.8
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1240	1260	1280	1280	1210	1260	1590	1590	1640	1550
Calcium	mg/L	2	2	3	3	3	2	4	5	6	6
Magnesium	mg/L	1	1	2	2	2	1	2	2	3	2
Potassium	mg/L	10	10	8	8	7	12	7	12	5	8
Sodium	mg/L	426	431	478	499	477	508	533	520	546	512
Bicarbonate	mg/L	674	682	731	731	752	725	590	587	662	624
Carbonate	mg/L	57	60	43	47	40	55	29	24	8	34
Chloride	mg/L	3	3	4	4	4	4	5	5	4	4
Sulfate	mg/L	298	300	307	306	272	303	590	644	563	512
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.009	0.008	0.009	0.008	-0.005	0.008	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.6	0.6	0.5	0.7	0.6	0.6	0.4	0.4	0.4	0.4
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	0.05	0.06	0.21	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.08	0.06	0.12	0.18	0.12	35	0.09	0.1	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.02	0.02	-0.02	-0.02	0.02	0.88	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.008	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003
Uranium, dissolved	mg/L	0.002	0.001	0.002	0.001	0.0005	0.0012	0.041	0.038	0.044	0.028
Uranium, suspended	mg/L	-0.001			-0.0003	0.0004			-0.001	-0.001	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	5.2			1.17	-1	
Lead 210, suspended	pCi/L	-1			1	-1			1.94	1.44	
Polonium 210, dissolved	pCi/L	-1			-1	1.9			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	0.3	0.3	1.38	0.94	2.35	1.5
Ra-226, suspended	pCi/L	-0.2			-0.2	0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	4.1	10.1	4.9	-2	-7	-6	69.1	46.1	56.8	48.1
Gross Beta	pCi/L	5.8	9.7	-7	-3	13.6	319	16.6	18.3	13.3	9.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		34-7OZ	34-7OZ	34-7OZ	34-7OZ	34-7DM	34-7DM	34-7DM	34-7DM	34-7DM	34-7DM
Sample Date		2/14/11	6/7/11	9/7/11	10/24/11	3/30/10	5/20/10	8/10/10	10/13/10	2/14/11	6/8/11
Alkalinity (as CaCO3)	mg/L	580	593	584	586	463	449	547	447	605	422
Ammonia	mg/L	0.5	0.4	0.2	0.3	0.8	1.8	2.4	1.5	2.9	1.5
Fluoride	mg/L	0.4	0.6	0.4	0.4	0.9	1.1	0.9	0.9	0.8	1.2
Laboratory conductivity	µmhos/cm	2040	1820	2250	2400	2740	3080	3220	3100	3390	2680
Laboratory pH	s.u.	8.8	8.8	8.8	8.8	10	10.1	10.8	9.9	11.1	9.7
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1550	1500	1450	1470	1600	1760	1900	1860	2130	1990
Calcium	mg/L	6	5	5	5	3	2	3	2	6	2
Magnesium	mg/L	2	2	2	2	2	-1	-1	-1	-1	-1
Potassium	mg/L	11	9	8	8	32	23	36	22	37	19
Sodium	mg/L	560	535	555	582	686	722	688	645	807	709
Bicarbonate	mg/L	632	634	642	629	168	143	-5	208	-5	247
Carbonate	mg/L	37	44	34	43	195	199	312	166	324	132
Chloride	mg/L	5	5	7	7	699	818	539	640	638	759
Sulfate	mg/L	541	506	498	496	75	71	146	123	234	143
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	0.1	-0.1	0.1	0.4
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	0.014	0.009	0.008	0.007	0.008	0.008
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4	0.4	0.4	0.4	0.8	0.9	0.8	1	0.8	0.9
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	0.21	0.08	0.1	0.1	0.18
Iron, total	mg/L	-0.05	-0.05	-0.05	-0.05	1.02	1.81	10.2	2.22	3.75	6.29
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.15	0.02	0.05	0.08
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	0.017	0.023	0.016	0.014	0.025	0.024
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.03	0.0272	0.0298	0.0282	0.001	0.002	-0.001	-0.001	-0.001	0.0004
Uranium, suspended	mg/L		-0.0003	-0.0003			-0.001	-0.001			0.0006
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		1.5	4.9			-1	-1			-1
Lead 210, suspended	pCi/L		-1	-1			-1	1			1.2
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	1.1	0.9	1	0.9	-0.2	-0.2	-0.2	-0.2	0.2	0.3
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	0.5			0.8
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	1.1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	0.325			0.3
Gross Alpha	pCi/L	43.3	26	54.1	62.2	3.5	4.4	20	10.5	-5	-2
Gross Beta	pCi/L	14.3	4.4	16	9.3	19.4	10.5	28	16.3	12.6	3.1

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		34-7DM	34-7DM	42-19SM	42-19SM	42-19SM	42-19SM	42-19SM	42-19SM	42-19SM	42-19SM
Sample Date		9/7/11	10/24/11	3/16/10	5/18/10	8/4/10	10/5/10	2/17/11	5/6/11	8/4/11	10/18/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	421	404	420	282	303	319	386	430	470	518
Ammonia	mg/L	1	1	2.8	1.4	1.2	0.8	0.4	0.4	0.3	0.4
Fluoride	mg/L	1	1	1.6	1.5	1.5	1.4	1.2	1.1	1.4	0.9
Laboratory conductivity	µmhos/cm	3330	3370	1690	1540	1580	1620	1760	1760	2110	2160
Laboratory pH	s.u.	9.9	9.5	11.5	10.8	10.6	10.3	10.2	10	9.9	9.5
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1840	1820	830	970	990	1040	1200	1300	1330	1350
Calcium	mg/L	2	2	3	1	1	1	1	1	1	2
Magnesium	mg/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Potassium	mg/L	32	21	17	11	10	11	11	13	13	15
Sodium	mg/L	779	718	275	325	342	323	447	440	490	542
Bicarbonate	mg/L	205	267	-5	-5	12	64	123	222	296	393
Carbonate	mg/L	152	111	137	152	175	160	171	149	136	118
Chloride	mg/L	696	731	7	5	4	4	8	5	6	5
Sulfate	mg/L	152	118	179	405	371	414	462	469	574	457
Aluminum, dissolved	mg/L	0.4	0.3	0.2	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.01	-0.005	0.007	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	1	0.9	0.3	0.4	0.4	0.4	0.8	0.4	0.5	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.4	0.1	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	23.3	3.02	0.66	0.11	0.16	-0.05	0.08	-0.05	0.05	0.08
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.37	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	0.05	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.03	0.006	-0.005	-0.005	-0.005	-0.005	0.017	-0.005	-0.005	0.005
Silver, dissolved	mg/L	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0004	0.0004	-0.001	-0.001	-0.001	-0.001	-0.0003	-0.0003	-0.0003	-0.0003
Uranium, suspended	mg/L	-0.0003			-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.01	-0.01	0.02	-0.01
Lead 210, dissolved	pCi/L	-1			-1	-1			1.8	1.5	
Lead 210, suspended	pCi/L	-1			-1	-1			-1	1.4	
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1	-1	
Polonium 210, suspended	pCi/L	-1			-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	-0.2	0.2	-0.2	-0.2	0.21	-0.2	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	1.6	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	-7	-14	-2	-2	2.78	2.8	-5	-3	-4	5.2
Gross Beta	pCi/L	-10	-20	10.8	6.8	6.9	6	-7	-8	5.9	9

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
Sample Station Name		42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19DM	42-19DM
Sample Date		3/11/10	5/17/10	7/10/10	10/5/10	2/17/11	5/6/11	8/4/11	10/18/11	3/16/10	5/17/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	477	474	480	480	487	478	473	471	481	352
Ammonia	mg/L	0.3	0.3	0.5	0.4	0.5	0.3	0.4	0.4	2.5	2.1
Fluoride	mg/L	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	1.2	1.6
Laboratory conductivity	µmhos/cm	2080	1850	2200	2130	2000	1570	2340	2280	2000	1600
Laboratory pH	s.u.	8.6	8.8	8.7	8.7	8.6	8.8	8.7	8.6	11.5	10.9
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1500	1520	1650	1500	1500	1660	1500	1490	940	960
Calcium	mg/L	6	6	6	7	7	5	7	7	5	4
Magnesium	mg/L	2	2	2	3	3	2	3	2	-1	-1
Potassium	mg/L	6	6	5	7	6	6	5	5	48	27
Sodium	mg/L	499	532	547	541	537	442	541	540	315	369
Bicarbonate	mg/L	539	519	543	533	556	522	537	537	-5	-5
Carbonate	mg/L	21	29	21	26	19	30	20	18	160	195
Chloride	mg/L	5	4	3	3	4	4	5	5	182	326
Sulfate	mg/L	638	640	595	600	598	399	602	575	42	30
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.4	0.2
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.01	0.01
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	-0.05	-0.05
Iron, total	mg/L	0.11	0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	0.21	0.36
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.06	0.03
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.008	-0.005
Silver, dissolved	mg/L			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	0.011	0.01	0.01	0.009	0.009	0.0113	0.0096	0.0093	-0.001	-0.001
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.01	-0.01	0.04	-0.01
Lead 210, dissolved	pCi/L		-1	1.4			1.5	3			-1
Lead 210, suspended	pCi/L		1.35	1.86			1.9	2.2			-1
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	1.38	1.36	1.46	1.4	1.4	0.7	1.4	1.2	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	1.6	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	19.4	15.4	18.7	19.6	13.7	24.8	18.3	20.4	-2	-2
Gross Beta	pCi/L	4.2	9.8	8.54	13.4	7.9	-7	-7	11.2	34.3	19.7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectio
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
Sample Results											
Sample Type*		GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Domestic	GW Domestic	GW Domestic	GW Domestic
Sample Station Name		42-19DM	42-19DM	42-19DM	42-19DM	42-19DM	42-19DM	CSWELL01	CSWELL01	CSWELL01	CSWELL01
Sample Date		8/4/10	10/5/10	2/17/11	5/6/11	8/3/11	10/18/11	8/6/09	10/23/09	1/22/10	5/13/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	386	443	431	445	443	452	792	633	633	637
Ammonia	mg/L	0.6	0.4	0.4	0.4	0.4	0.5	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	1.4	1.4	1.3	1.2	1.5	1.2	0.4	0.3	0.3	0.4
Laboratory conductivity	µmhos/cm	1920	2040	1920	1880	2260	2240	2560	1880	1550	1930
Laboratory pH	s.u.	9.6	9.3	9.3	9.2	9.1	9	8.3	8.4	8.4	8.4
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.4	0.1	-0.1	0.6
Total Dissolved Solids	mg/L	1080	1170	1140	1260	1230	1210	1920	1340	1030	1610
Calcium	mg/L	2	2	3	3	3	3	39	16	9	29
Magnesium	mg/L	-1	-1	-1	-1	-1	-1	30	12	6	19
Potassium	mg/L	11	10	11	11	10	11	14	9	8	11
Sodium	mg/L	390	480	489	477	508	535	574	444	393	527
Bicarbonate	mg/L	282	389	388	430	445	462	931	758	748	760
Carbonate	mg/L	93	74	67	56	47	44	18	7	12	9
Chloride	mg/L	345	385	451	477	463	452	6	3	2	6
Sulfate	mg/L	9	7	5	3	3	2	688	368	224	558
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.006	-0.005	-0.005	0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.7	0.8	0.8	0.8	0.9	0.9	0.4	0.4	0.3	0.4
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.31	-0.05	0.1	0.06	0.1	-0.05	-0.05	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.02	-0.02	-0.02	0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.012	0.01	0.017	0.017	0.017	0.007	0.006	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003				
Uranium, dissolved	mg/L	-0.001	-0.001	-0.0003	-0.0003	-0.0003	-0.0003	0.014	0.008	0.004	0.015
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003					-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.04	0.02	0.04	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	1.2			-1		-1
Lead 210, suspended	pCi/L	-1			-1	1.5					-1
Polonium 210, dissolved	pCi/L	-1			-1	-1			-1		-1
Polonium 210, suspended	pCi/L	-1			-1	-1					-1
Ra-226, dissolved	pCi/L	-0.2	-0.2	0.2	-0.2	-0.2	-0.2	0.86	-0.2	0.38	0.5
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2					-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	1.66	1.44	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2		-0.2
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2					-0.2
Gross Alpha	pCi/L	-3.5	-2	-3	-4	-3	-4	18.3	16.3	7.2	9.5
Gross Beta	pCi/L	-6.8	8.9	-7	-7	6.1	-7	11.3	12.4	-3.96	6.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

	Sample Type*	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring	GW Monitoring
	Sample Station Name	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19OZ	42-19DM	42-19DM
	Sample Date	3/11/10	5/17/10	7/10/10	10/5/10	2/17/11	5/6/11	8/4/11	10/18/11	3/16/10	5/17/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	477	474	480	480	487	478	473	471	481	352
Ammonia	mg/L	0.3	0.3	0.5	0.4	0.5	0.3	0.4	0.4	2.5	2.1
Fluoride	mg/L	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	1.2	1.6
Laboratory conductivity	µmhos/cm	2080	1850	2200	2130	2000	1570	2340	2280	2000	1600
Laboratory pH	s.u.	8.6	8.8	8.7	8.7	8.6	8.8	8.7	8.6	11.5	10.9
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1500	1520	1650	1500	1500	1660	1500	1490	940	960
Calcium	mg/L	6	6	6	7	7	5	7	7	5	4
Magnesium	mg/L	2	2	2	3	3	2	3	2	-1	-1
Potassium	mg/L	6	6	5	7	6	6	5	5	48	27
Sodium	mg/L	499	532	547	541	537	442	541	540	315	369
Bicarbonate	mg/L	539	519	543	533	556	522	537	537	-5	-5
Carbonate	mg/L	21	29	21	26	19	30	20	18	160	195
Chloride	mg/L	5	4	3	3	4	4	5	5	182	326
Sulfate	mg/L	638	640	595	600	598	399	602	575	42	30
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.4	0.2
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.01	0.01
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	-0.05	-0.05
Iron, total	mg/L	0.11	0.05	-0.05	-0.05	-0.05	-0.05	0.06	-0.05	0.21	0.36
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.06	0.03
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.008	-0.005
Silver, dissolved	mg/L			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003		
Uranium, dissolved	mg/L	0.011	0.01	0.01	0.009	0.009	0.0113	0.0096	0.0093	-0.001	-0.001
Uranium, suspended	mg/L		-0.001	-0.001			-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.01	-0.01	0.04	-0.01
Lead 210, dissolved	pCi/L		-1	1.4			1.5	3			-1
Lead 210, suspended	pCi/L		1.35	1.86			1.9	2.2			-1
Polonium 210, dissolved	pCi/L		-1	-1			-1	-1			-1
Polonium 210, suspended	pCi/L		-1	-1			-1	-1			-1
Ra-226, dissolved	pCi/L	1.38	1.36	1.46	1.4	1.4	0.7	1.4	1.2	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	1.6	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Th-230, suspended	pCi/L		-0.2	-0.2			-0.2	-0.2			-0.2
Gross Alpha	pCi/L	19.4	15.4	18.7	19.6	13.7	24.8	18.3	20.4	-2	-2
Gross Beta	pCi/L	4.2	9.8	8.54	13.4	7.9	-7	-7	11.2	34.3	19.7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic
	Sample Station Name	CSWELL01	CSWELL01	CSWELL01	CSWELL01	CSWELL01	CSWELL01	DWWELL01	DWWELL01	DWWELL01	DWWELL01
	Sample Date	7/22/10	10/4/10	2/10/11	5/16/11	8/18/11	11/21/11	8/27/09	10/21/09	1/22/10	5/13/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	642	646	641	673	456	644	647	589	597	586
Ammonia	mg/L	-0.1	0.1	0.1	-0.1	0.5	-0.1	1.2	0.6	0.4	0.4
Fluoride	mg/L	0.3	0.3	0.3	0.4	0.3	0.3	0.7	0.7	0.6	0.6
Laboratory conductivity	µmhos/cm	2600	2100	1550	2600	2200	2480	2690	2560	2500	2210
Laboratory pH	s.u.	8.3	8.4	8.4	8.3	8.7	8.5	8.4	8.5	8.4	8.4
Nitrate/Nitrite	mg/L	0.9	0.5	-0.1	1.2	-0.1	0.7	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1920	1430	1150	2520	1480	1830	1880	1780	1820	1820
Calcium	mg/L	43	22	10	62	35	39	16	16	16	17
Magnesium	mg/L	33	18	6	50	23	30	6	6	6	6
Potassium	mg/L	12	12	8	16	14	12	11	12	12	12
Sodium	mg/L	570	459	414	700	471	501	629	665	610	624
Bicarbonate	mg/L	772	763	759	821	504	737	774	682	710	689
Carbonate	mg/L	5	12	11	-5	26	24	8	18	9	13
Chloride	mg/L	7	4	3	14	3	13	16	8	7	11
Sulfate	mg/L	723	460	244	1110	644	680	690	794	689	727
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4	0.4	0.3	0.5	0.4	0.4	0.6	0.6	0.5	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	1.96	0.21	0.58	0.66
Iron, total	mg/L	-0.05	-0.05	-0.05	0.07	-0.05	-0.05	5.02	2.73	1.84	1.73
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	0.04	-0.02	-0.02	0.07	0.05	0.04	0.03
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.009	0.007	-0.005	0.019	-0.005	0.006	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	0.005	-0.003	-0.003				
Uranium, dissolved	mg/L	0.02	0.011	0.004	0.0317	0.0041	0.014	-0.001	-0.001	-0.001	-0.001
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003					-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			-1	1.3					-1
Lead 210, suspended	pCi/L	-1			-1	-1					1.78
Polonium 210, dissolved	pCi/L	-1			-1	-1					-1
Polonium 210, suspended	pCi/L	-1			-1	-1					9.2
Ra-226, dissolved	pCi/L	0.49	0.4	0.2	0.8	0.4	0.4	0.35	-0.2	0.3	0.37
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2					-0.2
Ra-228, dissolved	pCi/L	-1	1.5	-1	-1	-1	1	-1	2.84	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2					-0.2
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2					-0.2
Gross Alpha	pCi/L	14.6	12.2	-5	23.9	-5	12.7	10.7	17.3	14.9	12
Gross Beta	pCi/L	13.2	4.3	-7	18.3	9.7	12.7	6.7	11.8	-10.2	10.5

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results											
	Sample Type*	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic
	Sample Station Name	DWWELL01	DWWELL01	DWWELL01	DWWELL01	DWWELL01	DWWELL01	HBWELL05	HBWELL05	HBWELL05	HBWELL05
	Sample Date	7/22/10	10/4/10	2/15/11	5/17/11	8/17/11	11/22/11	8/4/09	1/29/10	5/13/10	7/22/10
Parameter**	**Units**										
Alkalinity (as CaCO3)	mg/L	593	588	564	589	600	595	499	519	527	521
Ammonia	mg/L	0.4	0.6	0.5	0.4	0.3	0.4	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.6	0.6	0.5	0.5	0.5	0.6	0.3	0.3	0.3	0.2
Laboratory conductivity	µmhos/cm	2540	2540	2240	2080	2790	2520	1570	1520	1370	1610
Laboratory pH	s.u.	8.5	8.5	8.5	8.4	8.6	8.6	8.1	8	8	8.2
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	-0.1	0.2	-0.1
Total Dissolved Solids	mg/L	1820	1760	1760	1780	1770	1460	1100	1090	1160	1160
Calcium	mg/L	17	15	15	15	16	14	87	87	79	90
Magnesium	mg/L	6	6	6	6	6	5	36	34	33	38
Potassium	mg/L	11	13	13	12	13	12	8	8	7	8
Sodium	mg/L	582	558	601	570	612	548	258	232	251	246
Bicarbonate	mg/L	697	690	657	699	685	673	609	633	642	635
Carbonate	mg/L	13	14	15	9	23	26	-5	-5	-5	-5
Chloride	mg/L	7	7	8	8	9	11	6	4	5	4
Sulfate	mg/L	691	663	666	662	711	667	327	355	381	378
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.5	0.5	0.4	0.4	0.5	0.4	0.2	0.2	0.2	0.2
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.88	0.9	0.54	0.48	0.22	0.19	0.49	1.55	1.17	0.82
Iron, total	mg/L	1.73	1.71	1.22	1.61	1.48	1.47	32.8	17	7.38	8.39
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.04	0.03	0.03	0.03	0.03	0.03	0.08	0.12	0.11	0.17
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.007	0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	0.004	-0.003	-0.003				-0.003
Uranium, dissolved	mg/L	-0.001	-0.001	-0.001	0.0009	0.0005	0.0005	0.015	0.011	0.01	0.013
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003				-0.001	-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			1	-1				-1	-1
Lead 210, suspended	pCi/L	1.21			1.4	1.8				1.56	-1
Polonium 210, dissolved	pCi/L	-1			-1	-1				-1	-1
Polonium 210, suspended	pCi/L	8.91			6.7	1.9				-1	-1
Ra-226, dissolved	pCi/L	0.21	0.4	0.3	0.3	0.3	0.4	0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	-0.2			-0.2	-0.2				-0.2	-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2				-0.2	-0.2
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2				-0.2	-0.2
Gross Alpha	pCi/L	12.6	11.7	5.2	3.3	-4	-6	7.1	11.8	7.5	11.3
Gross Beta	pCi/L	7.71	7.2	-8	7	8.5	9.7	7.2	10	6.4	8.77

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*		GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic
Sample Station Name		HBWELL05	HBWELL05	HBWELL05	HBWELL05	HBWELL05	HBWELL06	P144030W	P144030W	P31770W	P31770W
Sample Date		10/5/10	2/10/11	6/29/11	8/12/11	11/21/11	3/23/10	8/24/10	8/16/11	9/3/09	11/18/09
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	543	543	538	536	541	768	443	438	501	504
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.5	-0.1	-0.1	-0.1	
Fluoride	mg/L	0.2	0.3	0.3	0.3	0.3	2.5	0.1	0.2	0.3	0.3
Laboratory conductivity	µmhos/cm	1660	1530	1830	1820	1620	1410	846	934	2510	2550
Laboratory pH	s.u.	8.1	8	8	8.3	8.2	8.5	8	8.2	8.2	8.2
Nitrate/Nitrite	mg/L	-0.1	-0.1	0.3	-0.1	0.7	-0.1	-0.1	-0.1	0.6	
Total Dissolved Solids	mg/L	1100	1220	1190	1200	1040	960	520	510	1800	1920
Calcium	mg/L	79	89	97	83	93	3	49	45	57	56
Magnesium	mg/L	36	38	44	34	37	2	25	23	25	23
Potassium	mg/L	8	9	12	10	9	3	16	16	14	12
Sodium	mg/L	229	268	288	294	271	397	113	121	593	514
Bicarbonate	mg/L	662	662	657	653	660	886	541	534	612	615
Carbonate	mg/L	-5	-5	-5	-5	-5	25	-5	-5	-5	-5
Chloride	mg/L	4	4	6	5	6	46	1	2	21	21
Sulfate	mg/L	367	383	409	392	370	25	56	55	842	853
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	
Boron, dissolved	mg/L	0.2	0.2	0.2	-0.1	0.2	0.5	-0.1	-0.1	0.3	
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
Iron, dissolved	mg/L	0.17	0.35	0.47	0.29	0.39	-0.05	0.08	0.33	0.9	
Iron, total	mg/L	2.4	8.02	9.37	47.6	21.3	0.1	0.13	0.38	0.91	
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
Manganese, total	mg/L	0.15	0.15	0.08	0.09	0.07	0.08	0.08	0.08	0.15	
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	
Selenium, dissolved	mg/L	0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.006	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003		-0.003	-0.003		
Uranium, dissolved	mg/L	0.013	0.013	0.0106	0.0108	0.0119	-0.001	0.024	0.0274	0.017	0.015
Uranium, suspended	mg/L			-0.0003	0.0029			-0.001	-0.0003		
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	
Zinc, dissolved	mg/L	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	
Lead 210, dissolved	pCi/L			1.4	1			-1	1.3		
Lead 210, suspended	pCi/L			1.7	6.8			-1	-1		
Polonium 210, dissolved	pCi/L			-1	-1			-1	-1		
Polonium 210, suspended	pCi/L			-1	1.5			-1	-1		
Ra-226, dissolved	pCi/L	0.2	0.3	-0.2	0.2	0.2	0.27	0.8	0.9	0.32	
Ra-226, suspended	pCi/L			-0.2	1.2			-0.2	-0.2		
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	
Th-230, dissolved	pCi/L			-0.2	-0.2			-0.2	-0.2		
Th-230, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2		
Gross Alpha	pCi/L	12.7	7.7	9.6	10	9.2	-2	23.9	20.4	7.8	36.8
Gross Beta	pCi/L	7.2	-8	12.1	7.4	8	3.6	23.8	17.2	12.9	17.1

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic
	Sample Station Name	P31770W	P42868W	P42868W	P42868W	P61006W	P61006W	P61006W	P61006W	P61006W	P78287W
	Sample Date	1/22/10	8/31/09	6/7/11	8/16/11	8/31/09	2/16/11	6/7/11	8/16/11	12/7/11	9/1/09
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	499	547	562	558	490	530	491	504	490	116
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	0.4
Fluoride	mg/L	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1	1.1
Laboratory conductivity	µmhos/cm	2550	1250	1120	1370	1030	1180	880	1140	1010	841
Laboratory pH	s.u.	8.2	8.7	8.6	8.8	8.3	8.4	8.1	8.5	8.2	8
Nitrate/Nitrite	mg/L	1.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1890	810	810	790	660	840	640	650	650	580
Calcium	mg/L	74	2	3	2	18	18	18	15	18	22
Magnesium	mg/L	37	1	1	1	9	9	9	7	9	5
Potassium	mg/L	11	3	4	4	8	9	8	8	9	6
Sodium	mg/L	565	321	342	329	244	299	239	254	221	148
Bicarbonate	mg/L	609	616	651	623	578	636	599	590	597	142
Carbonate	mg/L	-5	25	17	29	9	5	-5	13	-5	-5
Chloride	mg/L	23	1	2	2	-1	3	1	2	2	6
Sulfate	mg/L	865	117	119	116	74	158	70	78	78	260
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	0.02	0.02	0.016	-0.005	-0.005	0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.5
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	0.09	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.05	-0.05	-0.05	0.08	0.16	0.13	0.4	0.16	0.18	0.14
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.04	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.12
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.006	-0.005	-0.005	-0.005	-0.005	-0.005	0.006	-0.005	-0.005	-0.005
Silver, dissolved	mg/L			-0.003	-0.003		-0.003	-0.003	-0.003	-0.003	
Uranium, dissolved	mg/L	0.071	-0.001	-0.0003	-0.0003	0.002	0.0019	0.0016	0.0021	0.0023	-0.001
Uranium, suspended	mg/L			-0.0003	-0.0003			-0.0003	-0.0003		
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.06	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L			-1	-1			-1	-1		
Lead 210, suspended	pCi/L			1.2	-1			-1	2.2		
Polonium 210, dissolved	pCi/L			-1	-1			-1	-1		
Polonium 210, suspended	pCi/L			-1	-1			-1	-1		
Ra-226, dissolved	pCi/L	0.43	-0.2	-0.2	-0.2	1.13	0.6	0.6	0.8	0.8	-0.2
Ra-226, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2		
Ra-228, dissolved	pCi/L	-1	-1	1.8	-1	-1	-1	3.2	-1	-1	-1
Th-230, dissolved	pCi/L			-0.2	-0.2			-0.2	-0.2		
Th-230, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2		
Gross Alpha	pCi/L	35.8	-2	-2	-2	4.8	6.9	5.2	7.4	-3	-2
Gross Beta	pCi/L	14.4	-3	-4	-4	3.6	10.3	5.3	7.3	10.1	4.1

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
Sample Type*		GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic
Sample Station Name		TSWELL01	TW01	TW01	TW01	TW01	TW01	TW01	TW01	TW01	TW01
Sample Date		10/22/09	7/29/09	1/23/10	5/14/10	7/21/10	10/5/10	2/10/11	5/5/11	8/11/11	11/21/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	587	836	684	668	685	689	687	683	688	686
Ammonia	mg/L	-0.1	-0.1	-0.1	0.2	0.2	0.2	0.2	0.1	-0.1	0.2
Fluoride	mg/L	0.4	1.2	1.2	1.2	1.2	1.2	1.2	1	1.1	1.2
Laboratory conductivity	µmhos/cm	1300	2000	2000	2150	2050	2020	1910	1770	2280	2010
Laboratory pH	s.u.	8.7	8.4	8.4	8.4	8.4	8.5	8.4	8.5	8.5	8.6
Nitrate/Nitrite	mg/L	0.1	-0.05	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	910	1350	1440	1380	1430	1360	1440	1390	1470	1410
Calcium	mg/L	4	9	8	9	9	8	9	9	15	8
Magnesium	mg/L	2	4	4	4	5	4	4	4	8	4
Potassium	mg/L	4	7	6	7	7	8	8	8	10	9
Sodium	mg/L	353	509	457	438	477	473	507	539	528	492
Bicarbonate	mg/L	666	935	815	798	810	793	823	796	807	772
Carbonate	mg/L	24	42	10	8	13	23	8	18	16	32
Chloride	mg/L	1	8	5	7	4	4	5	6	6	7
Sulfate	mg/L	122	331	393	379	392	375	377	400	426	341
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.3
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.3	0.59	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Cadmium, dissolved	mg/L	-0.002	-0.0001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	0.001	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.03	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.22	0.04	0.08	-0.05	0.09	0.12	-0.05	0.07	0.18	0.11
Lead, dissolved	mg/L	-0.02	-0.002	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.02	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.012
Silver, dissolved	mg/L					-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.004	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.0003	-0.0003	-0.0003
Uranium, suspended	mg/L				-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	0.01	0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L				-1	-1			-1	-1	
Lead 210, suspended	pCi/L				-1	-1			-1	1.3	
Polonium 210, dissolved	pCi/L				-1	-1			-1	-1	
Polonium 210, suspended	pCi/L				-1	-1			-1	-1	
Ra-226, dissolved	pCi/L	0.46	-0.2	0.2	0.32	-0.2	0.3	-0.2	0.3	0.3	0.3
Ra-226, suspended	pCi/L				-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	1.17	-1	-1	-1	-1	-1	2.5	-1	-1	-1
Th-230, dissolved	pCi/L				-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L				-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	10.8	-2	-2	-2	-3.7	4.2	-4	-4	-4	4.8
Gross Beta	pCi/L	7.3	-3	-4.11	5.8	8.55	4.4	-7	-7	-7	-8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Domestic	GW Industrial
		Sample Station Name	TW02	TW02	TW02	TW02	TW02	TW02	TW02	TW02	TW02	19XX18
		Sample Date	7/29/09	10/21/09	1/23/10	5/13/10	7/21/10	10/5/10	2/10/11	5/4/11	8/12/11	8/6/09
Alkalinity (as CaCO3)	mg/L		646	654	621	613	630	632	631	627	617	656
Ammonia	mg/L		0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.1	-0.1
Fluoride	mg/L		0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5
Laboratory conductivity	µmhos/cm		2190	2110	2110	1840	2170	2160	2010	1770	2310	2410
Laboratory pH	s.u.		8.3	8.5	8.3	8.3	8.3	8.4	8.3	8.4	8.5	8.5
Nitrate/Nitrite	mg/L		-0.05	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.5
Total Dissolved Solids	mg/L		1500	1450	1550	1500	1500	1490	1580	1510	1490	1730
Calcium	mg/L		19	19	24	26	26	24	26	25	26	7
Magnesium	mg/L		8	8	11	11	12	11	11	11	11	2
Potassium	mg/L		11	11	12	11	13	13	14	12	13	5
Sodium	mg/L		543	544	477	484	482	466	519	518	514	655
Bicarbonate	mg/L		780	762	757	742	754	755	769	734	716	746
Carbonate	mg/L		-5	18	-5	-5	8	8	-5	15	18	27
Chloride	mg/L		15	10	10	11	9	8	10	10	11	6
Sulfate	mg/L		576	481	513	502	498	467	506	500	496	646
Aluminum, dissolved	mg/L		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L		-0.1	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L		0.52	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
Cadmium, dissolved	mg/L		-0.0001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L		0.002	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L		0.06	0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L		0.11	0.22	0.13	-0.05	0.12	-0.05	-0.05	0.06	-0.05	-0.05
Lead, dissolved	mg/L		-0.002	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L		0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.03	-0.02
Mercury	mg/L		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L						-0.003	-0.003	-0.003	-0.003	-0.003	
Uranium, dissolved	mg/L		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.0004	-0.0003	0.086
Uranium, suspended	mg/L					-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L		-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L		0.02	0.01	0.02	0.01	0.03	0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L					-1	-1			-1	1.2	
Lead 210, suspended	pCi/L					-1	-1			1.2	1	
Polonium 210, dissolved	pCi/L					-1	-1			-1	-1	
Polonium 210, suspended	pCi/L					-1	-1			-1	-1	
Ra-226, dissolved	pCi/L		0.45	0.31	0.49	0.49	0.41	1.1	0.4	0.6	0.4	39.5
Ra-226, suspended	pCi/L					-0.2	-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L		-1	1.54	-1	-1	-1	-1	1.3	-1	-1	-1
Th-230, dissolved	pCi/L					-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L					-0.2	-0.2			-0.2	-0.2	
Gross Alpha	pCi/L		2.4	4.4	3.1	-2	4.61	3.1	-5	-4	6.6	227
Gross Beta	pCi/L		-3	11.7	8.6	6.6	10.4	9.2	-8	9.6	9.6	52.3

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
Sample Type*		GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial
Sample Station Name		19XX18	19XX18	19XX18	19XX18	19XX18	19XX18	19XX18	19XX18	19XX18	19XX18
Sample Date		10/21/09	1/21/10	1/22/10	5/14/10	7/9/10	10/4/10	2/16/11	5/6/11	9/7/11	11/22/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	659	555		521	531	534	567	536	537	536
Ammonia	mg/L	-0.1	0.2		-0.1	-0.1	-0.1	0.6	-0.1	-0.1	-0.1
Fluoride	mg/L	0.5	0.6		0.6	0.6	0.5	0.5	0.4	0.5	0.6
Laboratory conductivity	µmhos/cm	2360	2320		2390	2370	2390	2220	2010	2510	2420
Laboratory pH	s.u.	8.6	8.6		8.5	8.6	8.6	8.6	8.6	8.6	8.6
Nitrate/Nitrite	mg/L	0.5	0.1		0.5	0.5	0.5	-0.1	0.5	0.3	0.4
Total Dissolved Solids	mg/L	1660	1690		1690	1790	1660	1690	1720	1650	1710
Calcium	mg/L	7	8		8	7	7	7	8	6	7
Magnesium	mg/L	2	3		3	3	3	2	3	2	2
Potassium	mg/L	5	4		4	4	5	4	4	5	5
Sodium	mg/L	629	580		499	543	542	592	614	593	559
Bicarbonate	mg/L	770	639		605	610	609	655	607	622	597
Carbonate	mg/L	17	19		15	19	21	18	23	17	28
Chloride	mg/L	7	6		8	7	6	6	8	8	10
Sulfate	mg/L	685	616		663	664	639	617	680	608	625
Aluminum, dissolved	mg/L	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.5	0.5		0.5	0.4	0.5	0.4	0.5	0.5	0.4
Cadmium, dissolved	mg/L	-0.002	-0.002		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05		-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.14	-0.05		-0.05	-0.05	-0.05	0.08	-0.05	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Mercury	mg/L	-0.001	-0.001		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L					-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.085	0.074		0.089	0.087	0.078	0.0726	0.0779	0.0835	0.0837
Uranium, suspended	mg/L				-0.001	-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	2.41			3.04	6.13			3.9	13.4	
Lead 210, suspended	pCi/L				1.43	2.8			1.7	3.4	
Polonium 210, dissolved	pCi/L	-1			4.04	6.4			4	1.1	
Polonium 210, suspended	pCi/L				3.91	5.9			-1	5.1	
Ra-226, dissolved	pCi/L	47.23	37.3		43.7	39.4	42	31.1	37.1	35.6	37.5
Ra-226, suspended	pCi/L				0.31	0.28			-0.2	0.7	
Ra-228, dissolved	pCi/L	1.65	1.35		-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L				-0.2	-0.2			-0.2	0.2	
Gross Alpha	pCi/L	185.2	252		267	167.7	324	267	190	233	207
Gross Beta	pCi/L	39.7	75		65.7	54	81.4	116	57.9	72.1	53.2

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Stock
	Sample Type*	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Industrial	GW Stock
	Sample Station Name	22X-19	22X-19	22X-19	22X-19	22X-19	22X-19	22X-19	22X-19	22X-19	CSWELL03
	Sample Date	1/21/10	1/22/10	5/14/10	7/9/10	10/4/10	2/17/11	5/6/11	9/7/11	11/22/11	10/23/09
Alkalinity (as CaCO3)	mg/L	467		462	471	472	475	475	469	470	327
Ammonia	mg/L	0.3		0.3	0.4	0.5	0.3	0.4	0.3	0.4	-0.1
Fluoride	mg/L	0.6		0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.1
Laboratory conductivity	µmhos/cm	2030		1840	2070	2080	2010	1820	2180	2110	651
Laboratory pH	s.u.	8.6		8.6	8.6	8.7	8.6	8.7	8.7	8.7	8.2
Nitrate/Nitrite	mg/L	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1460		1440	1520	1420	1470	1450	1390	1450	430
Calcium	mg/L	6		6	6	5	6	6	5	6	28
Magnesium	mg/L	2		2	2	2	2	2	1	2	15
Potassium	mg/L	4		4	4	5	5	4	4	5	9
Sodium	mg/L	444		465	507	474	537	522	506	508	97
Bicarbonate	mg/L	528		520	547	523	527	523	515	515	399
Carbonate	mg/L	21		21	13	26	26	28	28	29	-5
Chloride	mg/L	10		13	10	10	13	13	11	15	4
Sulfate	mg/L	520		535	538	511	569	546	517	501	32
Aluminum, dissolved	mg/L	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.4		0.4	0.4	0.4	0.4	0.4	0.4	0.4	-0.1
Cadmium, dissolved	mg/L	-0.002		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.06		-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.16
Iron, total	mg/L	0.07		0.05	0.06	-0.05	0.06	0.05	0.05	-0.05	3.62
Lead, dissolved	mg/L	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.08
Mercury	mg/L	-0.001		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L				-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	
Uranium, dissolved	mg/L	0.02		0.022	0.021	0.02	0.0213	0.02	0.016	0.0199	0.001
Uranium, suspended	mg/L			-0.001	-0.001			-0.0003	-0.0003		
Vanadium, dissolved	mg/L	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L			-1	-1			1.1	3		
Lead 210, suspended	pCi/L			1.21	1.46			-1	1.8		
Polonium 210, dissolved	pCi/L			-1	-1			-1	-1		
Polonium 210, suspended	pCi/L			-1	1.12			-1	-1		
Ra-226, dissolved	pCi/L	3.38		3.05	3.08	3.2	2.8	3.4	3.1	3.2	0.4
Ra-226, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2		
Ra-228, dissolved	pCi/L	-1		-1	-1	1.4	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L			-0.2	-0.2			-0.2	-0.2		
Th-230, suspended	pCi/L			-0.2	-0.2			-0.2	-0.2		
Gross Alpha	pCi/L	46.3		45.3	38.5	47.9	42.6	40.3	48.2	30.1	-2
Gross Beta	pCi/L	7.3		9.3	12.3	12.2	-7	9.4	12	8.2	8.5

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Parameter**	Units	Sample Type*	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
		Sample Station Name	CSWELL03	CSWELL03	CSWELL03	CSWELL03	HBWELL01	HBWELL03	HBWELL03	HBWELL03	HBWELL03	HBWELL03
		Sample Date	5/18/10	7/22/10	10/4/10	5/16/11	8/3/09	8/3/09	1/28/10	5/14/10	7/21/10	10/4/10
Alkalinity (as CaCO3)	mg/L		318	324	336	304	343	485	460	494	524	531
Ammonia	mg/L		0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.2	0.3
Fluoride	mg/L		0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Laboratory conductivity	µmhos/cm		543	617	654	542	732	1720	1520	1790	1800	1760
Laboratory pH	s.u.		8.4	8.1	8.2	8.3	8	8.2	8	8	8.1	8.1
Nitrate/Nitrite	mg/L		-0.1	-0.1	-0.1	-0.1	1.6	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L		390	380	370	370	440	1230	1140	1370	1310	1210
Calcium	mg/L		35	37	38	30	63	83	95	106	91	79
Magnesium	mg/L		18	19	20	17	47	52	55	56	52	44
Potassium	mg/L		9	9	9	9	14	16	14	17	17	20
Sodium	mg/L		76	74	82	86	26	248	178	238	267	275
Bicarbonate	mg/L		379	395	410	368	419	591	561	603	640	648
Carbonate	mg/L		-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
Chloride	mg/L		3	3	3	6	6	15	9	13	11	8
Sulfate	mg/L		28	28	32	32	53	411	402	540	437	408
Aluminum, dissolved	mg/L		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L		-0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.1	0.1	0.2	0.2
Cadmium, dissolved	mg/L		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L		0.55	0.83	0.5	0.44	0.21	0.55	2.25	2.78	3.94	4.14
Iron, total	mg/L		1.3	1.51	3.94	5.19	0.8	2.33	4.76	3.86	7.22	6.42
Lead, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L		0.34	0.32	0.32	0.21	-0.02	0.15	0.25	0.25	0.9	0.21
Mercury	mg/L		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L		0.006	-0.005	-0.005	-0.005	0.006	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L			-0.003	-0.003	0.005					-0.003	-0.003
Uranium, dissolved	mg/L		0.001	0.001	-0.001	0.0017	0.01	0.006	0.005	0.006	0.004	0.002
Uranium, suspended	mg/L		-0.001	-0.001		-0.0003				-0.001	-0.001	
Vanadium, dissolved	mg/L		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L		-0.01	0.01	-0.01	0.01	0.18	0.25	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		-1	-1		-1				-1	-1	
Lead 210, suspended	pCi/L		-1	-1		-1				1.21	-1	
Polonium 210, dissolved	pCi/L		-1	-1		-1				-1	-1	
Polonium 210, suspended	pCi/L		-1	-1		-1				-1	-1	
Ra-226, dissolved	pCi/L		0.3	0.34	0.4	0.3	0.27	0.87	0.85	1.03	0.77	0.8
Ra-226, suspended	pCi/L		-0.2	-0.2		-0.2				0.32	0.5	
Ra-228, dissolved	pCi/L		-1	-1	-1	-1	-1	1.2	-1	1.2	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2		-0.2				-0.2	-0.2	
Th-230, suspended	pCi/L		-0.2	-0.2		-0.2				-0.2	-0.2	
Gross Alpha	pCi/L		2.5	5.53	3.5	2.9	5.8	8.8	7	7.1	8.73	10.1
Gross Beta	pCi/L		7.7	7.36	8.8	6.7	12.2	9.3	11.2	11.5	17.3	15.4

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*	Units	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
Sample Station Name		HBWELL03	HBWELL03	HBWELL03	HBWELL03	HBWELL04	HBWELL04	HBWELL04	HBWELL04	HBWELL04	HBWELL04
Sample Date		2/10/11	6/29/11	8/12/11	11/21/11	8/3/09	9/1/09	1/29/10	5/13/10	7/21/10	6/29/11
Parameter**											
Alkalinity (as CaCO3)	mg/L	531	493	503	525	351		444	354	364	362
Ammonia	mg/L	0.2	-0.1	-0.1	0.2	-0.1		-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.3	0.3	0.3	0.3	0.2		0.2	0.2	0.2	0.1
Laboratory conductivity	µmhos/cm	1660	2030	1980	1740	1740	1730	1620	1640	1700	1820
Laboratory pH	s.u.	8	8	8.2	8.3	8	7.8	7.9	7.8	7.9	7.8
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	1.1		1.2	0.9	0.9	0.6
Total Dissolved Solids	mg/L	1360	1330	1350	1190	1420	1460	1380	1380	1370	1360
Calcium	mg/L	81	83	96	81	202		203	195	199	208
Magnesium	mg/L	41	52	50	41	60		62	58	64	66
Potassium	mg/L	20	17	19	21	7		7	7	7	6
Sodium	mg/L	305	315	294	292	133		141	117	123	136
Bicarbonate	mg/L	647	601	614	641	429		542	432	444	442
Carbonate	mg/L	-5	-5	-5	-5	-5		-5	-5	-5	-5
Chloride	mg/L	11	20	14	13	17		12	14	12	15
Sulfate	mg/L	433	508	490	424	597		654	591	583	585
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5		-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.2	0.1	0.1	-0.1		-0.1	-0.1	-0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002		-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	4.83	3.8	-0.05	5.89	-0.05		-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	4.31	5.69	5.22	9.34	0.95		0.92	0.46	0.07	1.21
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.2	0.23	0.25	0.23	0.08		0.08	0.07	0.07	0.09
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001		-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003					-0.003	-0.003
Uranium, dissolved	mg/L	0.002	0.004	0.0033	0.0018	0.034	0.039	0.033	0.034	0.033	0.029
Uranium, suspended	mg/L		-0.0003	-0.0003					-0.001	-0.001	-0.0003
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.02	-0.01	-0.01	0.04	0.03		0.05	0.04	0.03	0.05
Lead 210, dissolved	pCi/L		1.3	-1					-1	-1	1.8
Lead 210, suspended	pCi/L		-1	1.1					1.8	-1	-1
Polonium 210, dissolved	pCi/L		-1	-1					-1	-1	-1
Polonium 210, suspended	pCi/L		-1	-1					-1	-1	-1
Ra-226, dissolved	pCi/L	0.7	0.5	0.5	0.6	0.28	0.45	0.31	0.31	0.52	0.2
Ra-226, suspended	pCi/L		0.4	0.2					-0.2	0.59	-0.2
Ra-228, dissolved	pCi/L	1.1	1.1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2					-0.2	-0.2	-0.2
Th-230, suspended	pCi/L		-0.2	-0.2					-0.2	-0.2	-0.2
Gross Alpha	pCi/L	-4	-5	5.6	-4	20.7	16.1	15.2	12.1	23	20.9
Gross Beta	pCi/L	12.5	16	13.4	18.2	7.9	11.2	9.1	11	17.4	9.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*		GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
Sample Station Name		HBWELL04	HBWELL04	P17177W	P17177W	P17177W	P17177W	P17177W	P17177W	P17177W	P17177W
Sample Date		8/12/11	11/21/11	8/27/09	11/18/09	8/11/10	10/6/10	3/1/11	5/17/11	8/17/11	12/6/11
Parameter**	**Units**										
Alkalinity (as CaCO3)	mg/L	361	365	339	415	331	320	313	326	322	306
Ammonia	mg/L	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.2	0.2	0.1	0.1	-0.1	0.1	0.1	0.1	-0.1	0.1
Laboratory conductivity	µmhos/cm	1800	1630	923	904	889	822	755	746	944	684
Laboratory pH	s.u.	8	8.1	7.8	7.9	8	8	8.1	7.9	8	7.9
Nitrate/Nitrite	mg/L	0.8	0.9	21.9		22.4	20	14.9	-0.1	16.3	0.2
Total Dissolved Solids	mg/L	1350	1260	610	580	590	530	500	580	550	440
Calcium	mg/L	201	189	115	117	108	100	91	103	98	60
Magnesium	mg/L	58	60	30	31	30	27	23	27	26	17
Potassium	mg/L	8	8	5	5	5	5	5	5	5	5
Sodium	mg/L	137	132	39	38	38	39	43	33	42	71
Bicarbonate	mg/L	441	445	414	507	404	391	382	398	395	373
Carbonate	mg/L	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
Chloride	mg/L	15	16	21	20	19	17	18	25	26	15
Sulfate	mg/L	587	576	46	41	40	45	45	41	39	55
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002		-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05		-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.87	0.53	0.11		-0.05	-0.05	-0.05	0.08	1.54	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.08	0.07	-0.02		-0.02	-0.02	-0.02	-0.02	0.13	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001		-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	0.005	-0.005	-0.005	0.01	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0291	0.0301	0.024	0.024	0.022	0.022	0.0214	0.0263	0.023	0.0189
Uranium, suspended	mg/L	-0.0003				-0.001			-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.07	0.02	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	1.2				-1			-1	-1	
Lead 210, suspended	pCi/L	-1				-1			-1	1.8	
Polonium 210, dissolved	pCi/L	-1				-1			-1	-1	
Polonium 210, suspended	pCi/L	-1				-1			-1	-1	
Ra-226, dissolved	pCi/L	0.3	0.3	-0.2		-0.2	0.3	-0.2	-0.2	0.2	-0.2
Ra-226, suspended	pCi/L	-0.2				-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	1.2	-1	-1		-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2				-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2				-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	19.6	16.6	19.5	12.1	16.8	15.7	17.1	12.9	11.6	5.8
Gross Beta	pCi/L	14.4	10.3	6.4	7.3	8.6	9.8	13.6	10	4.1	7.4

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results

Sample Type*		GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
Sample Station Name		P21128P	P21128P	P21128P	P22582P	P22582P	P22582P	P22582P	P50113W	P50113W	P50113W
Sample Date		6/24/10	8/24/10	10/7/10	10/22/09	10/7/10	6/29/11	8/16/11	8/28/09	11/18/09	8/11/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	414	438	425	440	491	381	378	511	553	536
Ammonia	mg/L	-0.1	-0.1	0.1	-0.1	0.6	-0.1	-0.1	-0.1		0.5
Fluoride	mg/L	0.2	0.1	0.2	0.6	0.9	0.3	0.3	0.2	0.3	0.2
Laboratory conductivity	µmhos/cm	962	956	973	972	1120	895	881	1840	1710	1500
Laboratory pH	s.u.	8.4	8.4	8.5	8.6	8.7	8.5	8.4	8	8	8.1
Nitrate/Nitrite	mg/L	1.3	1.1	1.6	-0.1	-0.1	-0.1	-0.1	44.9		23.9
Total Dissolved Solids	mg/L	640	620	620	610	730	520	500	1320	1150	1060
Calcium	mg/L	19	13	20	12	6	24	24	120	111	97
Magnesium	mg/L	9	7	11	6	3	12	12	67	60	52
Potassium	mg/L	18	15	20	5	4	8	7	7	7	6
Sodium	mg/L	185	207	205	234	277	171	159	208	190	162
Bicarbonate	mg/L	491	514	492	500	536	443	448	624	675	654
Carbonate	mg/L	7	10	13	18	31	11	7	-5	-5	-5
Chloride	mg/L	3	2	3	4	2	6	6	63	48	36
Sulfate	mg/L	96	91	96	85	112	62	60	249	259	172
Aluminum, dissolved	mg/L	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005		-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5		-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	0.2	0.3	0.1	0.1	-0.1		-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002		-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Iron, dissolved	mg/L	0.1	-0.05	-0.05	-0.05	0.07	0.8	0.8	-0.05		-0.05
Iron, total	mg/L	5.81	16.5	0.13	0.22	0.11	1.32	1.57	-0.05		-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Manganese, total	mg/L	0.17	0.51	-0.02	-0.02	-0.02	0.05	0.04	0.07		0.44
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001		-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Selenium, dissolved	mg/L	0.127	0.103	0.165	-0.005	-0.005	-0.005	-0.005	0.042	0.026	0.05
Silver, dissolved	mg/L		-0.003	-0.003		-0.003	-0.003	-0.003			-0.003
Uranium, dissolved	mg/L	0.388	0.271	0.375	0.003	-0.001	0.0035	0.004	0.212	0.21	0.173
Uranium, suspended	mg/L	0.004	0.002				-0.0003	-0.0003			-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Lead 210, dissolved	pCi/L	1.76	17.4				1.6	1.1			2.1
Lead 210, suspended	pCi/L	1.26	1.8				-1	3.6			-1
Polonium 210, dissolved	pCi/L	-1	-1				-1	-1			-1
Polonium 210, suspended	pCi/L	-1	-1				-1	-1			-1
Ra-226, dissolved	pCi/L	0.21	0.3	0.3	-0.2	-0.2	-0.2	-0.2	0.6		0.5
Ra-226, suspended	pCi/L	0.91	0.7				-0.2	-0.2			-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	2.59	-1	1.6	-1	-1		-1
Th-230, dissolved	pCi/L	-0.58	-0.2				-0.2	-0.2			-0.2
Th-230, suspended	pCi/L	0.49	0.209				-0.2	-0.2			-0.2
Gross Alpha	pCi/L	239	178	224	2.7	2.8	3.3	3.9	87.3	90.4	78.6
Gross Beta	pCi/L	123.2	128	67.9	4.1	-3	5.9	4.7	40.7	37.3	40.1

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
	Sample Type*	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
	Sample Station Name	P50113W	P50113W	P50113W	P50113W	P50113W	P50883W	P50883W	P50883W	P50883W	P61007W
	Sample Date	10/6/10	3/1/11	5/17/11	8/17/11	12/6/11	8/24/10	10/7/10	6/29/11	8/16/11	8/31/09
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	534	535	534	527	524	296	340	348	342	537
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Laboratory conductivity	µmhos/cm	1640	1390	1260	1360	1660	588	686	775	753	1170
Laboratory pH	s.u.	8	8.3	7.9	8.1	7.8	8.1	8.2	8.4	8.3	8.8
Nitrate/Nitrite	mg/L	29	12.2	19.1	11.1	30.5	0.1	0.2	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1130	1050	1070	800	1220	370	430	430	410	720
Calcium	mg/L	94	94	90	81	118	33	44	46	45	3
Magnesium	mg/L	54	51	50	45	64	16	20	21	19	1
Potassium	mg/L	7	7	7	6	8	7	6	6	6	3
Sodium	mg/L	202	201	193	139	209	81	81	95	91	293
Bicarbonate	mg/L	652	653	652	642	639	361	414	409	411	591
Carbonate	mg/L	-5	-5	-5	-5	-5	-5	-5	8	-5	32
Chloride	mg/L	41	35	39	28	70	3	3	4	4	-1
Sulfate	mg/L	231	219	193	111	203	39	44	45	44	83
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.007
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	0.07	0.09	0.07	0.14	-0.05
Iron, total	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	1.6	0.23	8.94	7.71	0.17
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.42	0.6	0.37	0.39	0.5	0.05	0.02	0.11	0.09	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	0.03	0.024	0.027	0.023	0.022	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	
Uranium, dissolved	mg/L	0.189	0.191	0.207	0.174	0.181	0.025	0.028	0.0278	0.0325	0.001
Uranium, suspended	mg/L			-0.0003	-0.0003		-0.001		0.0003	0.0015	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	0.04	0.07	0.14	0.16	-0.01
Lead 210, dissolved	pCi/L			-1	2.2		-1		3.5	2.3	
Lead 210, suspended	pCi/L			1	1.4		-1		3.4	3.5	
Polonium 210, dissolved	pCi/L			-1	-1		-1		-1	-1	
Polonium 210, suspended	pCi/L			-1	-1		-1		1.2	-1	
Ra-226, dissolved	pCi/L	0.2	0.2	0.3	0.3	0.5	7.7	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L			-0.2	-0.2		-0.2		-0.2	-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	1.27	-1	-1	-1
Th-230, dissolved	pCi/L			-0.2	-0.2		-0.2		-0.2	-0.2	
Th-230, suspended	pCi/L			-0.2	-0.2		-0.2		-0.2	-0.2	
Gross Alpha	pCi/L	100	117	101	69.7	73.3	15.4	16.9	14.8	18.8	2.3
Gross Beta	pCi/L	38.1	51.9	40.7	27.1	33.1	10.1	6.4	12.3	13.1	-3

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectio
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
	Sample Station Name	P61007W	P61007W	P61007W	P71108W	P71108W	P71108W	P71108W	P71108W	P71108W	P71108W
	Sample Date	2/16/11	6/7/11	12/7/11	8/27/09	11/18/09	6/23/10	8/11/10	3/1/11	5/17/11	12/6/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	536	531	521	580	572	541	549	549	590	588
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Laboratory conductivity	µmhos/cm	1050	985	1110	2190	1930	1670	1660	1490	1600	1860
Laboratory pH	s.u.	8.6	8.5	8.5	8	7.9	8	8.1	8.3	8	7.9
Nitrate/Nitrite	mg/L	0.3	-0.1	0.3	0.6		0.2	0.2	0.1	0.2	0.3
Total Dissolved Solids	mg/L	730	720	720	1610	1460	1200	1160	1170	1460	1380
Calcium	mg/L	3	3	3	76	75	70	65	64	62	65
Magnesium	mg/L	1	1	2	98	79	71	66	56	67	68
Potassium	mg/L	3	3	5	9	9	9	9	9	9	10
Sodium	mg/L	293	295	280	381	328	230	242	252	329	346
Bicarbonate	mg/L	617	619	603	707	698	660	670	670	720	718
Carbonate	mg/L	18	15	16	-5	-5	-5	-5	-5	-5	-5
Chloride	mg/L	1	1	2	7	7	5	4	5	8	9
Sulfate	mg/L	83	81	86	679	601	387	377	321	516	498
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1		-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.006	0.008	-0.005	-0.005		-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5		-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.2	0.2	0.1		-0.1	-0.1	-0.1	0.1	0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002		-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05		-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	0.08	0.3	1.5	0.07		-0.05	-0.05	0.15	0.33	0.19
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	0.25		0.18	0.21	0.22	0.31	0.29
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001		-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	0.02	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01		-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	0.026	0.015	0.007	0.008	0.014	0.008	0.006
Silver, dissolved	mg/L	-0.003	-0.003	-0.003				-0.003	-0.003	0.039	-0.003
Uranium, dissolved	mg/L	0.0021	0.0041	0.0051	0.113	0.094	0.064	0.065	0.0639	0.097	0.0974
Uranium, suspended	mg/L		-0.0003				-0.001	-0.001		-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02		-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	0.03	-0.01	-0.01	0.03		0.03	0.02	0.06	0.03	0.06
Lead 210, dissolved	pCi/L		-1				-1	-1		-1	
Lead 210, suspended	pCi/L		-1				-1	-1		-1	
Polonium 210, dissolved	pCi/L		-1				-1	-1		-1	
Polonium 210, suspended	pCi/L		-1				-1	-1		-1	
Ra-226, dissolved	pCi/L	-0.2	1.4	0.3	-0.2		0.22	0.9	0.4	0.3	0.2
Ra-226, suspended	pCi/L		-0.2				-0.2	-0.2		-0.2	
Ra-228, dissolved	pCi/L	-1	-1	-1	-1		1.07	1.6	1.2	-1	-1
Th-230, dissolved	pCi/L		-0.2				-0.2	-0.2		-0.2	
Th-230, suspended	pCi/L		-0.2				-0.2	-0.2		-0.2	
Gross Alpha	pCi/L	2.8	5.2	3.9	57.7	59.2	40	37	37.9	50.2	54.4
Gross Beta	pCi/L	-4	-4	5	18.6	22.3	14.8	21.7	16.3	20.9	22.7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Sample Results											
Sample Type*		GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
Sample Station Name		P84665W	P84665W	P84665W	P84665W	P84665W	P84665W	P84665W	SBWELL01	SBWELL01	SBWELL01
Sample Date		8/28/09	8/11/10	10/6/10	3/1/11	5/17/11	8/17/11	12/6/11	8/27/09	11/18/09	6/23/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	406	412	412	420	471	464	455	531	533	531
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1
Fluoride	mg/L	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	-0.1	0.1
Laboratory conductivity	µmhos/cm	922	936	952	891	875	1120	1020	1170	1130	1140
Laboratory pH	s.u.	8	8.1	8	8.3	8	8.1	7.9	8.7	8.6	8.7
Nitrate/Nitrite	mg/L	0.9	2	2.4	1.4	1.1	0.6	2.1	-0.1		-0.1
Total Dissolved Solids	mg/L	590	650	620	700	690	650	690	740	740	750
Calcium	mg/L	74	81	79	95	88	88	88	1	2	2
Magnesium	mg/L	36	36	37	40	38	43	42	-1	-1	-1
Potassium	mg/L	5	5	6	6	5	6	8	2	3	3
Sodium	mg/L	76	83	75	81	83	87	88	313	268	272
Bicarbonate	mg/L	495	503	502	512	575	566	555	609	600	596
Carbonate	mg/L	-5	-5	-5	-5	-5	-5	-5	20	24	26
Chloride	mg/L	6	8	8	10	11	15	13	1	1	1
Sulfate	mg/L	98	107	107	108	109	108	119	96	102	95
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1		-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.007		0.007
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5		-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1		0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002		-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Iron, dissolved	mg/L	0.07	-0.05	-0.05	-0.05	-0.05	0.38	0.12	-0.05		-0.05
Iron, total	mg/L	3.75	0.07	0.09	0.09	0.11	2.8	1.84	-0.05		-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Manganese, total	mg/L	0.05	0.02	-0.02	-0.02	0.02	0.13	0.03	-0.02		-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001		-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01		-0.01
Selenium, dissolved	mg/L	0.009	0.007	-0.005	0.01	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L		-0.003	-0.003	-0.003	0.004	-0.003	-0.003			
Uranium, dissolved	mg/L	0.056	0.056	0.056	0.0612	0.0688	0.0617	0.0576	0.001	0.001	0.002
Uranium, suspended	mg/L		-0.001			-0.0003	0.0009				-0.001
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02		-0.02
Zinc, dissolved	mg/L	0.08	0.08	0.08	0.06	0.03	0.79	0.06	-0.01		-0.01
Lead 210, dissolved	pCi/L		-1			-1	4				1.04
Lead 210, suspended	pCi/L		-1			1.4	1.7				-1
Polonium 210, dissolved	pCi/L		-1			-1	-1				-1
Polonium 210, suspended	pCi/L		-1			-1	-1				-1
Ra-226, dissolved	pCi/L	0.33	0.3	0.4	0.5	0.3	0.7	0.5	-0.2		-0.2
Ra-226, suspended	pCi/L		-0.2			-0.2	-0.2				-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1		-1
Th-230, dissolved	pCi/L		-0.2			-0.2	-0.2				-0.2
Th-230, suspended	pCi/L		-0.2			-0.2	-0.2				-0.2
Gross Alpha	pCi/L	37.3	26.7	30.8	32.5	41.1	29.5	27.8	-2	2.5	2
Gross Beta	pCi/L	15.2	16	16.4	11	17.6	23	14.5	3.4	-3	-3.7

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

		Sample Results									
	Sample Type*	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock
	Sample Station Name	SBWELL01	SBWELL01	SBWELL01	SBWELL01	SBWELL01	SBWELL01	SBWELL02	SBWELL02	SBWELL02	SBWELL02
	Sample Date	8/11/10	10/6/10	3/1/11	5/17/11	8/17/11	12/6/11	6/23/10	8/11/10	10/6/10	5/17/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	532	535	537	536	524	527	390	387	488	481
Ammonia	mg/L	0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.2	0.2
Fluoride	mg/L	-0.1	0.1	-0.1	0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.2
Laboratory conductivity	µmhos/cm	1140	1140	1120	1010	1240	1170	758	735	1010	858
Laboratory pH	s.u.	8.7	8.7	8.9	8.7	8.8	8.6	8.1	8.2	8.3	8.3
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.9	0.3	0.4	-0.1	-0.1
Total Dissolved Solids	mg/L	770	750	770	740	720	760	480	480	650	650
Calcium	mg/L	2	2	2	2	2	2	35	39	19	20
Magnesium	mg/L	-1	-1	-1	-1	-1	-1	23	26	11	11
Potassium	mg/L	3	3	3	3	3	3	15	16	12	12
Sodium	mg/L	274	288	307	307	281	279	106	98	205	219
Bicarbonate	mg/L	602	592	579	595	581	597	476	472	595	587
Carbonate	mg/L	23	30	38	29	29	23	-5	-5	-5	-5
Chloride	mg/L	1	-1	1	2	2	2	-1	1	1	-1
Sulfate	mg/L	96	94	92	93	94	98	40	37	78	80
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.006	0.007	0.006	0.007	0.008	0.007	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.14	0.2	0.06	0.07
Iron, total	mg/L	-0.05	-0.05	-0.05	-0.05	-0.05	0.72	0.46	0.61	0.12	0.13
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	0.03	0.05	0.05	0.04	0.05
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	0.01	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	0.005	-0.003	-0.003		-0.003	-0.003	0.031
Uranium, dissolved	mg/L	-0.001	0.002	0.0014	0.0014	0.0014	0.0012	0.005	0.005	-0.001	0.0004
Uranium, suspended	mg/L	-0.001			-0.0003	-0.0003		-0.001	-0.001		-0.0003
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	-1			1.2	-1		-1	-1		-1
Lead 210, suspended	pCi/L	1.5			-1	1.1		1.11	-1		-1
Polonium 210, dissolved	pCi/L	-1			-1	-1		-1	-1		-1
Polonium 210, suspended	pCi/L	-1			-1	-1		-1	-1		-1
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.21	0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	0.7			-0.2	-0.2		-0.2	7		-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	1.22	-1	-1
Th-230, dissolved	pCi/L	-0.2			-0.2	-0.2		-0.2	-0.2		-0.2
Th-230, suspended	pCi/L	-0.2			-0.2	-0.2		-0.2	-0.2		-0.2
Gross Alpha	pCi/L	3.4	2.8	-2	-2	-3	-3	4.1	3.89	2.7	-2
Gross Beta	pCi/L	-3	3.2	-4	-4	-4	-4	12.3	9.53	7.6	8.4

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data

Parameter**	Units	Sample Results									
Sample Type*		GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	GW Stock	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring
Sample Station Name		SBWELL02	SBWELL02	TWWELL03	TWWELL03	TWWELL03	TWWELL03	SW-1	SW-1	SW-1	SW-1
Sample Date		8/17/11	12/6/11	7/28/10	10/5/10	5/5/11	8/11/11	3/9/10	4/13/10	3/16/11	4/6/11
Alkalinity (as CaCO3)	mg/L	469	380	603	596	588	581	331	497	591	421
Ammonia	mg/L	0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1	-0.1	0.2	-0.1
Fluoride	mg/L	0.1	-0.1	1.3	1.5	1.2	1.5	0.2	0.2	0.3	0.1
Laboratory conductivity	µmhos/cm	1070	729	1440	1490	1350	1620	795	1110	1360	876
Laboratory pH	s.u.	8.3	8	8.8	8.7	8.8	8.8	8.2	8.7	8.3	8.5
Nitrate/Nitrite	mg/L	-0.1	0.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1
Total Dissolved Solids	mg/L	610	460	1000	970	990	970	580	790	980	640
Calcium	mg/L	21	36	2	3	3	3	17	37	26	24
Magnesium	mg/L	11	25	1	2	1	1	12	24	22	22
Potassium	mg/L	12	16	7	4	4	4	11	11	13	12
Sodium	mg/L	196	101	374	360	379	386	154	204	306	192
Bicarbonate	mg/L	566	464	664	657	642	635	404	542	721	490
Carbonate	mg/L	-5	-5	35	35	37	37	-5	32	-5	12
Chloride	mg/L	1	2	2	2	3	3	7	8	10	7
Sulfate	mg/L	79	39	201	195	207	198	98	147	178	102
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.1	0.6	0.5	0.5	0.5	-0.1	0.1	0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.11	0.35	-0.05	-0.05	-0.05	-0.05	0.33	0.08	0.32	-0.05
Iron, total	mg/L	0.16	0.55	-0.05	-0.05	-0.05	-0.05	0.95	0.37	0.88	0.24
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.05	0.06	-0.02	-0.02	-0.02	-0.02	0.17	0.05	0.27	0.04
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003
Uranium, dissolved	mg/L	0.0004	0.005	-0.001	-0.001	-0.0003	-0.0003	0.008	0.011	0.014	0.0093
Uranium, suspended	mg/L	-0.0003		-0.001		-0.0003	-0.0003				0.0017
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	1.1		-1		1.2	-1				-1
Lead 210, suspended	pCi/L	2.1		-1		-1	-1				-1
Polonium 210, dissolved	pCi/L	-1		-1		-1	-1				-1
Polonium 210, suspended	pCi/L	-1		-1		-1	-1				-1
Ra-226, dissolved	pCi/L	-0.2	0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	-0.2		-0.2		-0.2	-0.2				-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2		-0.2		-0.2	-0.2				-0.2
Th-230, suspended	pCi/L	-0.2		-0.2		-0.2	-0.2				-0.2
Gross Alpha	pCi/L	-2	3.7	-3.1	6.7	-2	-3	8.8	7.3	7	8.5
Gross Beta	pCi/L	10	13.3	-6.7	6.9	-4	-7	8.6	9.7	8.1	12

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data											
		Sample Results									
	Sample Type*	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring
	Sample Station Name	SW-1	SW-1	SW-1	SW-1	SW-2	SW-2	SW-2	SW-2	SW-2	SW-2
	Sample Date	5/4/11	5/23/11	6/8/11	8/11/11	3/9/10	4/13/10	3/16/11	4/6/11	5/4/11	5/23/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	471	319	462	559	118	600	133	332	558	235
Ammonia	mg/L	0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1
Fluoride	mg/L	0.2	0.2	0.2	0.3	-0.1	0.3	-0.1	0.1	0.2	0.1
Laboratory conductivity	µmhos/cm	963	688	920	1300	283	1250	317	734	1060	654
Laboratory pH	s.u.	8.5	8.5	8.3	8.3	8.1	8.6	8.1	8.4	8.5	8.3
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	760	520	740	810	220	940	210	550	860	510
Calcium	mg/L	28	25	30	32	14	58	19	44	57	61
Magnesium	mg/L	24	19	24	28	6	29	7	19	28	23
Potassium	mg/L	11	9	9	12	6	7	9	10	8	11
Sodium	mg/L	222	132	192	250	37	216	42	120	225	72
Bicarbonate	mg/L	550	371	553	674	144	655	162	393	633	287
Carbonate	mg/L	12	9	5	-5	-5	38	-5	6	24	-5
Chloride	mg/L	8	5	7	10	3	10	2	5	9	29
Sulfate	mg/L	134	96	119	105	26	168	33	101	148	122
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	0.006	0.011	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.1	-0.1	0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.1	0.08	0.19	0.2	0.26	0.14	0.12	0.12	0.09	0.08
Iron, total	mg/L	0.32	0.4	0.54	0.75	0.64	0.32	0.56	0.2	0.14	0.29
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.12	0.05	0.42	0.64	0.11	0.05	0.08	0.03	-0.02	0.04
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0102	0.0093	0.008	0.0044	0.003	0.02	0.0029	0.0131	0.013	0.0121
Uranium, suspended	mg/L	-0.001	-0.0003	-0.0003	-0.0003				-0.0003	-0.001	-0.0003
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	1.3	1.2	-1	1.9				1.4	1.1	-1
Lead 210, suspended	pCi/L	1.2	-1	1	-1				-1	-1	-1
Polonium 210, dissolved	pCi/L	-1	-1	-1	-1				-1	-1	-1
Polonium 210, suspended	pCi/L	-1	-1	-1	-1				-1	-1	-1
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	-0.2	-0.2	-0.2	-0.2				-0.2	-0.2	-0.2
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	1.3	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2				-0.2	-0.2	-0.2
Th-230, suspended	pCi/L	-0.2	-0.2	-0.2	-0.2				-0.2	-0.2	-0.2
Gross Alpha	pCi/L	10.5	5.9	5.1	3.3	4	7.9	2.5	8.6	5.7	6.5
Gross Beta	pCi/L	11.4	9.3	8.7	8.7	6	7.4	4.6	6.4	8.2	8.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Parameter**	Units	Sample Results									
Sample Type*		SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Monitoring	SW Reservoir
Sample Station Name		SW-2	SW-2	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	CSRES02 (R-5)
Sample Date		6/8/11	8/11/11	3/9/10	4/13/10	3/16/11	4/6/11	5/4/11	5/23/11	6/8/11	8/6/09
Alkalinity (as CaCO3)	mg/L	659	801	357	586	250	442	648	522	599	72
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1
Fluoride	mg/L	0.3	0.4	0.1	0.3	0.1	0.2	0.2	0.2	0.3	-0.1
Laboratory conductivity	µmhos/cm	1130	1930	794	1120	611	971	1140	993	1010	156
Laboratory pH	s.u.	8.5	8.5	8.3	8.8	8.4	8.7	8.4	8.7	8.4	7.5
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	970	1210	580	800	420	740	950	790	820	500
Calcium	mg/L	62	30	24	32	20	35	46	32	45	20
Magnesium	mg/L	32	18	25	35	18	35	44	41	42	4
Potassium	mg/L	8	9	10	11	7	13	9	10	9	14
Sodium	mg/L	264	380	129	196	89	181	250	210	212	3
Bicarbonate	mg/L	754	929	435	619	299	488	755	575	699	88
Carbonate	mg/L	25	24	-5	47	-5	25	17	30	15	-5
Chloride	mg/L	8	8	4	7	3	5	6	6	3	20
Sulfate	mg/L	118	206	92	102	82	149	149	192	89	-1
Aluminum, dissolved	mg/L	0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.3
Arsenic, dissolved	mg/L	0.006	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.028
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.1	0.2	-0.1	0.1	-0.1	0.1	0.2	0.1	0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.11	0.07	0.34	0.07	0.18	0.11	0.26	0.1	0.48	8.32
Iron, total	mg/L	0.18	0.34	0.87	0.58	0.4	0.31	0.93	0.6	0.91	15.1
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.03	0.05	0.17	0.21	0.1	0.06	0.65	0.12	0.71	1.05
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003			-0.003	-0.003	-0.003	-0.003	-0.003	
Uranium, dissolved	mg/L	0.0036	0.0036	0.009	0.014	0.01	0.0239	0.0176	0.0152	0.0098	-0.001
Uranium, suspended	mg/L	-0.0003	-0.0003				-0.0003	-0.001	-0.0003	-0.0003	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.05
Lead 210, dissolved	pCi/L	-1	2				3.3	1.7	-1	-1	
Lead 210, suspended	pCi/L	-1	-1				-1	1.5	1.2	-1	
Polonium 210, dissolved	pCi/L	-1	-1				-1	-1	-1	-1	
Polonium 210, suspended	pCi/L	-1	-1				-1	-1	-1	-1	
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-2.7
Ra-226, suspended	pCi/L	-0.2	-0.2				-0.2	-0.2	-0.2	-0.2	
Ra-228, dissolved	pCi/L	1.7	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2	-0.2				-0.2	-0.2	-0.2	-0.2	
Th-230, suspended	pCi/L	-0.2	-0.2				-0.2	-0.2	-0.2	-0.2	
Gross Alpha	pCi/L	2.4	4.5	7.3	6	4.6	14.9	10.3	12.7	15	2.15
Gross Beta	pCi/L	4.7	9.4	11.2	9.8	5.2	9.9	10.3	9.5	12.4	16.8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

		Water-Quality Data									
		Sample Results									
	Sample Type*	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir
	Sample Station Name	CSRES02 (R-5)	CSRES02 (R-5)	CSRES02 (R-5)	CSRES02 (R-5)	CSRES02 (R-5)	CSRES03 (R-3)	CSRES03 (R-3)	CSRES03 (R-3)	CSRES03 (R-3)	CSRES03 (R-3)
	Sample Date	10/23/09	5/18/10	8/10/10	5/16/11	8/18/11	8/6/09	10/23/09	5/20/10	8/10/10	10/4/10
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	47	113	147	39	45	117	164	136	154	346
Ammonia	mg/L	-0.1	5.6	4	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.6
Fluoride	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	0.1
Laboratory conductivity	µmhos/cm	108	240	327	76	100	296	441	444	544	1000
Laboratory pH	s.u.	7.7	8.1	7.5	7.5	8.4	10	8.6	8.7	9.2	8.5
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	110	220	370	60	100	200	290	270	420	760
Calcium	mg/L	11	30	34	9	9	25	30	35	28	54
Magnesium	mg/L	2	5	7	2	3	8	14	13	12	26
Potassium	mg/L	9	17	23	6	10	9	13	8	14	29
Sodium	mg/L	-1	5	5	2	1	22	37	38	69	119
Bicarbonate	mg/L	58	138	179	47	54	56	190	149	106	398
Carbonate	mg/L	-5	-5	-5	-5	-5	43	5	9	41	12
Chloride	mg/L	3	6	9	1	1	3	5	3	5	9
Sulfate	mg/L	-1	3	1	-1	-1	32	48	81	111	169
Aluminum, dissolved	mg/L	0.2	1.4	0.2	0.4	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	0.005	0.021	-0.005	0.006	0.007	-0.005	-0.005	0.012	0.022
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.2	0.92	0.2	0.26	0.08	-0.05	-0.05	-0.05	-0.05	-0.05
Iron, total	mg/L	1.68	19.7	16.7	1.66	1.02	0.08	0.22	0.42	0.45	1.32
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.14	0.94	1.24	0.07	0.21	-0.02	0.07	0.03	0.06	1.12
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	0.006	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L			-0.003	0.004	-0.003				-0.003	-0.003
Uranium, dissolved	mg/L	-0.001	-0.001	-0.001	-0.0003	0.0033	-0.001	0.002	0.002	0.002	0.005
Uranium, suspended	mg/L		-0.001	-0.001		-0.0003			-0.001	-0.001	
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		-1	-1		1.3			-1	-1	
Lead 210, suspended	pCi/L		3.26	-1		1.6			-1	-1	
Polonium 210, dissolved	pCi/L		-1	-1		-1			-1	-1	
Polonium 210, suspended	pCi/L		-1	-1		-1			-1	-1	
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	0.46	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L		1.12	-0.2		-0.2			-0.2	-0.2	
Ra-228, dissolved	pCi/L	1.22	-1	-1	-1	-1	-1	1.52	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2		-0.2			-0.2	-0.2	
Th-230, suspended	pCi/L		0.28	-0.2		-0.2			-0.2	-0.2	
Gross Alpha	pCi/L	-2	3.85	7.4	-2	-2	-2	-2	3.4	2.5	11.1
Gross Beta	pCi/L	10.5	20.3	28.7	5.4	8.2	8.9	12.1	8.6	12.1	27.6

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

		Water-Quality Data									
		Sample Results									
Sample Type*		SW Reservoir	SW Reservoir	SW Reservoir	SW Oshoto R.	SW Oshoto R.	SW Oshoto R.	SW Oshoto R.	SW Oshoto R.	SW Oshoto R.	SW Oshoto R.
Sample Station Name		CSRES03 (R-3)	CSRES03 (R-3)	CSRES04 (R-4)	HBRES04 (R-2)	HBRES04 (R-2)	HBRES04 (R-2)	HBRES04 (R-2)	HBRES04 (R-2)	HBRES04 (R-2)	HBRES04 (R-2)
Sample Date		5/16/11	8/18/11	8/6/09	8/4/09	10/22/09	1/9/10	4/14/10	7/21/10	10/5/10	3/1/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	100	142	72	301	353	444	390	430	507	619
Ammonia	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.3	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	-0.1	-0.1	-0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Laboratory conductivity	µmhos/cm	282	368	143	713	791	969	827	965	1090	1260
Laboratory pH	s.u.	8.3	9.7	9.5	9.1	8.8	8.3	8.7	9.2	8.9	8.9
Nitrate/Nitrite	mg/L	0.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	220	280	100	460	520	680	560	640	730	920
Calcium	mg/L	31	24	16	20	20	29	24	15	16	27
Magnesium	mg/L	9	11	4	17	18	25	20	23	24	28
Potassium	mg/L	9	12	7	10	12	14	11	12	14	15
Sodium	mg/L	20	31	4	123	131	171	148	177	226	263
Bicarbonate	mg/L	122	97	64	292	385	539	429	347	520	668
Carbonate	mg/L	-5	37	11	37	23	-5	23	88	49	43
Chloride	mg/L	2	4	-1	8	8	9	8	7	8	12
Sulfate	mg/L	61	36	3	66	70	95	79	97	96	114
Aluminum, dissolved	mg/L	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	0.01	0.009	0.01	0.006	-0.005	-0.005	0.008	0.007	0.007
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	0.1	0.1	0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.07	-0.05	0.1	-0.05	-0.05	0.06	-0.05	-0.05	-0.05	0.1
Iron, total	mg/L	0.54	-0.05	0.46	0.12	0.14	0.1	0.25	0.07	0.13	0.4
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	-0.02	0.03	0.04	0.08	0.05	0.16	0.04	0.03	0.07	0.19
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	0.009
Silver, dissolved	mg/L	0.003	-0.003						-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.001	0.0009	-0.001	0.006	0.006	0.007	0.007	0.009	0.008	0.0107
Uranium, suspended	mg/L		-0.0003						-0.001		
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		1.6						-1		
Lead 210, suspended	pCi/L		-1						-1		
Polonium 210, dissolved	pCi/L		-1						-1		
Polonium 210, suspended	pCi/L		-1						-1		
Ra-226, dissolved	pCi/L	-0.2	-0.2	0.2	-0.2	-0.2	-0.2	0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2						-0.2		
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	1.1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2						-0.2		
Th-230, suspended	pCi/L		-0.2						-0.2		
Gross Alpha	pCi/L	-2	-2	-2	5.1	9.1	5.5	3.1	7.34	9.5	5
Gross Beta	pCi/L	7.9	9.3	6.9	8.1	22.9	12.7	11.3	11.5	13	10.8

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

		Water-Quality Data									
		Sample Results									
	Sample Type*	SW Oshoto R.	SW Oshoto R.	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir
	Sample Station Name	HBRES04 (R-2)	HBRES04 (R-2)	P15507S (R-10)	P15507S (R-10)	P15507S (R-10)	P15507S (R-10)	P15507S (R-10)	P15508S (R-8)	P15508S (R-8)	P15508S (R-8)
	Sample Date	4/6/11	8/11/11	5/5/10	8/24/10	10/5/10	5/5/11	8/16/11	10/5/10	5/5/11	8/16/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	423	374	639	1210	1700	573	1070	1220	594	856
Ammonia	mg/L	-0.1	-0.1	0.2	0.2	0.1	-0.1	0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.1	0.2	0.3	0.5	0.7	0.2	0.4	0.5	0.2	0.4
Laboratory conductivity	µmhos/cm	869	954	1220	2010	2910	1150	1900	2130	1130	1720
Laboratory pH	s.u.	8.6	9	8.9	9.2	9.9	8.8	9.3	9.4	8.8	9.5
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	630	580	970	1510	2320	940	1340	1560	930	1090
Calcium	mg/L	22	17	43	16	10	42	19	13	35	15
Magnesium	mg/L	22	22	46	42	43	48	56	36	43	44
Potassium	mg/L	11	10	11	31	27	10	57	16	10	22
Sodium	mg/L	180	166	212	467	739	236	368	494	238	370
Bicarbonate	mg/L	484	372	635	1130	965	608	964	1030	636	706
Carbonate	mg/L	16	42	71	169	548	45	167	226	44	166
Chloride	mg/L	7	9	7	12	21	8	19	8	6	11
Sulfate	mg/L	94	94	163	54	84	199	19	90	177	86
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	0.009	0.006	0.016	0.052	0.005	0.043	0.015	-0.005	0.018
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	-0.1	0.2	0.1	0.3	0.4	0.1	0.3	0.2	0.1	0.2
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	-0.05	-0.05	0.08	0.13	0.06	-0.05	0.14	0.08	0.06	0.14
Iron, total	mg/L	0.47	0.07	1.14	6.28	1.06	0.26	1.43	1.3	0.88	0.55
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.08	0.07	0.11	0.34	0.12	0.03	0.16	0.09	0.06	0.08
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	0.06	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003		-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.0087	0.0072	0.019	0.021	0.087	0.0416	0.0193	0.027	0.0212	0.0145
Uranium, suspended	mg/L	-0.0003	-0.0003	-0.001	0.003						
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	0.03	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	0.03	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L	1.8	1.7	1.46	-1						
Lead 210, suspended	pCi/L	-1	1	1.55	-1						
Polonium 210, dissolved	pCi/L	-1	-1	-1	-1						
Polonium 210, suspended	pCi/L	-1	-1	-1	-1						
Ra-226, dissolved	pCi/L	-0.2	-0.2	0.31	-0.2	-0.2	-0.2	0.3	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L	-0.2	-0.2	-0.2	0.3						
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2						
Th-230, suspended	pCi/L	-0.2	-0.2	0.28	0.46						
Gross Alpha	pCi/L	7.5	5.4	13.6	27.3	48.7	10.8	11.7	15	10.2	9.5
Gross Beta	pCi/L	4.9	7.1	12.9	44.4	48.5	11.5	49.4	20	10.6	21.4

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

		Water-Quality Data									
		Sample Results									
Sample Type*		SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir
Sample Station Name		P17592S (R-6)	P17592S (R-6)	P17592S (R-6)	TSRES01 (R-7)	TWRES01 (R-1)	TWRES01 (R-1)	TWRES01 (R-1)	TWRES01 (R-1)	TWRES01 (R-1)	TWRES01 (R-1)
Sample Date		10/5/10	5/5/11	8/17/11	10/22/09	9/1/09	10/22/09	6/23/10	7/22/10	10/5/10	5/5/11
Parameter**	Units										
Alkalinity (as CaCO3)	mg/L	1090	553	556	1080	64	95	55	59	116	44
Ammonia	mg/L	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Fluoride	mg/L	0.5	0.2	0.3	0.3	0.1	0.1	-0.1	0.1	0.2	-0.1
Laboratory conductivity	µmhos/cm	2270	1080	1250	2000	146	213	129	133	231	92
Laboratory pH	s.u.	9	8.6	9.4	8.6	8.8	8	9.2	8.7	8.5	8.2
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	1710	890	800	1360	110	120	100	100	170	80
Calcium	mg/L	18	55	12	41	13	19	12	11	21	9
Magnesium	mg/L	33	28	22	60	3	5	3	3	5	2
Potassium	mg/L	18	9	5	24	10	12	9	10	14	6
Sodium	mg/L	515	230	246	440	7	9	7	8	15	4
Bicarbonate	mg/L	1080	628	456	1190	71	116	49	68	137	53
Carbonate	mg/L	123	23	109	66	-5	-5	9	-5	-5	-5
Chloride	mg/L	20	10	9	10	1	4	-1	-1	2	-1
Sulfate	mg/L	224	160	90	136	4	8	5	5	4	5
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1	-0.1
Arsenic, dissolved	mg/L	0.013	-0.005	0.011	0.005	0.006	-0.005	-0.005	0.006	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	0.1	0.1	0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.18	0.07	-0.05	0.07	0.34	0.18	0.2	0.35	-0.05	0.05
Iron, total	mg/L	0.77	0.21	0.18	1.95	0.78	2.62	0.43	0.64	1.35	0.13
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.08	-0.02	0.14	0.25	0.03	0.12	0.02	0.03	0.07	-0.02
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	0.005	0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003	-0.003	-0.003					-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	0.02	0.0161	0.0023	0.028	-0.001	-0.001	-0.001	-0.001	0.001	-0.0003
Uranium, suspended	mg/L							-0.001	-0.001		
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L							1.29	-1		
Lead 210, suspended	pCi/L							-1	-1		
Polonium 210, dissolved	pCi/L							-1	-1		
Polonium 210, suspended	pCi/L							-1	-1		
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	0.29	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L							-0.2	-0.2		
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	1.25	1.34	-1	-1	-1	-1
Th-230, dissolved	pCi/L							-0.2	-0.2		
Th-230, suspended	pCi/L							-0.2	-0.2		
Gross Alpha	pCi/L	16.3	7	3.2	23	-2	2.25	-2	3.55	2.5	-2
Gross Beta	pCi/L	20	6.8	5.2	31.4	8.7	13.1	9.3	9.26	14.3	5.2

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

Water-Quality Data							
		Sample Results					
Sample Type*		SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir	SW Reservoir
Sample Station Name		TWRES01 (R-1)	TWRES02 (R-11)	TWRES02 (R-11)	TWRES02 (R-11)	TWRES02 (R-11)	TWRES02 (R-11)
Sample Date		8/11/11	5/21/10	7/22/10	10/5/10	5/5/11	8/11/11
Parameter**	Units						
Alkalinity (as CaCO3)	mg/L	69	183	107	732	235	323
Ammonia	mg/L	-0.1	-0.1	-0.1	0.1	-0.1	-0.1
Fluoride	mg/L	-0.1	0.1	-0.1	1.7	0.2	0.5
Laboratory conductivity	µmhos/cm	155	397	273	1870	477	801
Laboratory pH	s.u.	9	8.6	9.8	10	8.5	9.4
Nitrate/Nitrite	mg/L	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total Dissolved Solids	mg/L	90	250	210	1190	360	470
Calcium	mg/L	14	38	14	5	37	10
Magnesium	mg/L	4	18	10	5	15	15
Potassium	mg/L	7	5	5	5	4	6
Sodium	mg/L	7	24	26	427	60	153
Bicarbonate	mg/L	73	209	51	363	272	280
Carbonate	mg/L	5	7	39	261	8	56
Chloride	mg/L	-1	2	2	3	3	4
Sulfate	mg/L	4	28	27	235	54	70
Aluminum, dissolved	mg/L	-0.1	-0.1	-0.1	1.5	-0.1	-0.1
Arsenic, dissolved	mg/L	-0.005	-0.005	0.007	-0.005	-0.005	-0.005
Barium, dissolved	mg/L	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Boron, dissolved	mg/L	0.2	-0.1	-0.1	0.6	-0.1	0.2
Cadmium, dissolved	mg/L	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chromium, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Iron, dissolved	mg/L	0.9	-0.05	-0.05	0.8	-0.05	-0.05
Iron, total	mg/L	0.61	0.37	0.06	1.29	-0.05	-0.05
Lead, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Manganese, total	mg/L	0.04	0.03	0.03	0.03	-0.02	0.06
Mercury	mg/L	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Molybdenum, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Nickel, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Selenium, dissolved	mg/L	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Silver, dissolved	mg/L	-0.003		-0.003	-0.003	-0.003	-0.003
Uranium, dissolved	mg/L	-0.0003	0.006	0.003	0.002	0.005	0.0012
Uranium, suspended	mg/L		-0.001	-0.001			
Vanadium, dissolved	mg/L	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Zinc, dissolved	mg/L	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead 210, dissolved	pCi/L		-1	-1			
Lead 210, suspended	pCi/L		-1	-1			
Polonium 210, dissolved	pCi/L		-1	-1			
Polonium 210, suspended	pCi/L		-1	-1			
Ra-226, dissolved	pCi/L	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ra-226, suspended	pCi/L		-0.2	-0.2			
Ra-228, dissolved	pCi/L	-1	-1	-1	-1	-1	-1
Th-230, dissolved	pCi/L		-0.2	-0.2			
Th-230, suspended	pCi/L		-0.2	-0.2			
Gross Alpha	pCi/L	-2	5.6	3.61	4.8	3.3	-2
Gross Beta	pCi/L	6	11.6	5.99	3.9	5.2	4.9

Notes:

*Water Type
GW=Ground water
SW=Surface water

**Negative number indicates value of less than detectic
(e.g., -0.01 is <0.01)

***Blank cells indicate that no data were reported.

APPENDIX D
VISUAL-IMPACTS ANALYSIS

APPENDIX D: VISUAL IMPACTS ANALYSIS

Scenic Quality Inventory Point B-1

Photograph from Scenic Quality Inventory Point C-1 to North

Table D.1
Scenic Quality Inventory and Evaluation

Key Factor	Rating Criteria	Score
Landform	Low rolling hills, foothills, or flat valley bottoms or few or no interesting landscape features.	1
Vegetation	Some variety of vegetation, but only one or two major types.	3
Water	Present/Little Missouri River and the Oshoto Reservoir are occasionally visible.	1
Color	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element.	3
Influence of Adjacent Scenery	Adjacent scenery has little or no influence on overall visual quality.	0
Scarcity	Interesting within its setting, but fairly common within the region.	1
Cultural Modifications	Modifications add variety, but are very discordant and promote strong disharmony.	-2
	TOTAL SCORE =	**7**

Scenic Quality Inventory Point B-2

Photograph from Scenic Quality Inventory Point B-2 to East

Table D.2
Scenic Quality Inventory and Evaluation

Key Factor	Rating Criteria	Score
Landform	High vertical relief as expressed in prominent cliffs, spires, or massive rock outcrops; or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers.	5
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns.	5
Water	Present, but not noticeable.	0
Color	Some intensity or variety in colors and contrast of the soil, rock, and vegetation, but not a dominant scenic element.	3
Influence of Adjacent Scenery	Adjacent scenery greatly enhances visual quality (Devils Tower).	5
Scarcity	One of a kind, or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing.	5
Cultural Modifications	Modifications add little or no visual variety to the area, and introduce no discordant elements.	0
	TOTAL SCORE =	**23**

Scenic Quality Inventory Point B-3

Photograph from Scenic Quality Inventory Point B-3 to South

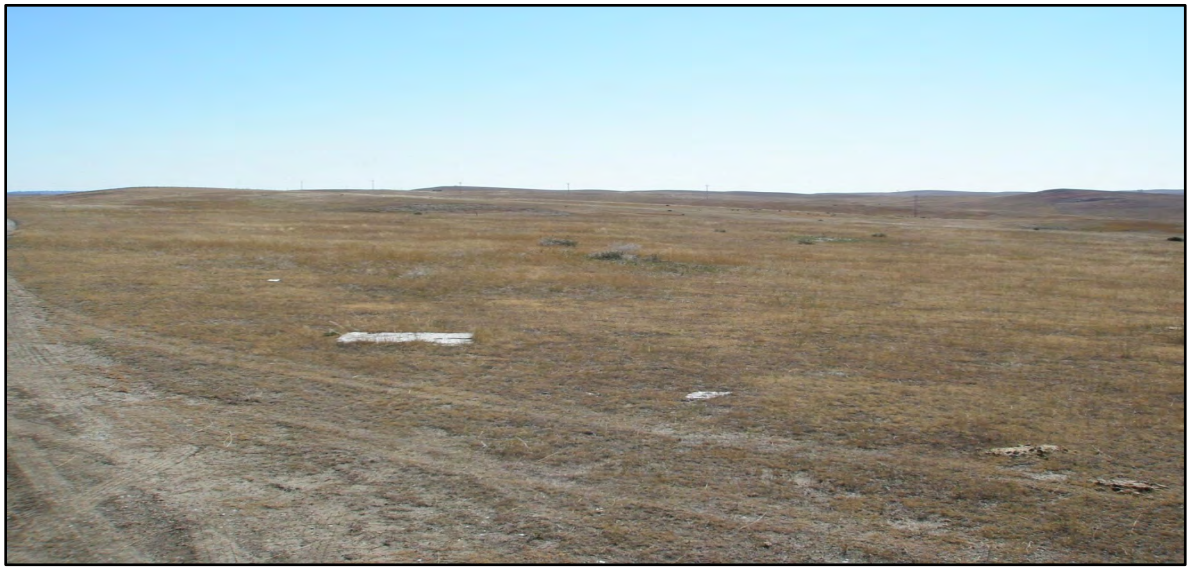

Table D.3
Scenic Quality Inventory and Evaluation

Key Factor	Rating Criteria	Score
Landform	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features.	1
Vegetation	Little or no variety or contrast in vegetation.	1
Water	Present, but not noticeable.	0
Color	Subtle color variations, contrast, or interest; generally mute tones.	1
Influence of Adjacent Scenery	Adjacent scenery has little or no influence on overall visual quality.	0
Scarcity	Interesting within its setting, but fairly common within the region.	1
Cultural Modifications	Modifications add little or no visual variety to the area and introduce no discordant elements.	0
	TOTAL SCORE =	**4**

Scenic Quality Inventory Point B-4

Photograph from Scenic Quality Inventory Point B-4 to South

Table D.4
Scenic Quality Inventory and Evaluation

Key Factor	Rating Criteria	Score
Landform	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features.	1
Vegetation	Some variety of vegetation, but only one or two major types.	3
Water	Present, but not noticeable.	1
Color	Some intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element.	3
Influence of Adjacent Scenery	Adjacent scenery has little or no influence on overall visual quality.	0
Scarcity	Interesting within its setting, but fairly common within the region.	1
Cultural Modifications	Modifications add variety but are discordant and promote disharmony.	-1
	TOTAL SCORE =	**8**

Table D.5 Scenic Quality Inventory and Evaluation Average of Four Views	
Key Factor	**Score**
Landform	2.00
Vegetation	3.00
Water	0.50
Color	2.50
Influence of Adjacent Scenery	1.25
Scarcity	2.00
Cultural Modifications	-0.75
AVERAGE =	**10.50**

APPENDIX E
DRAFT ROSS PROJECT
PROGRAMMATIC AGREEMENT

FINAL DRAFT FOR COMMENT

PROGRAMMATIC AGREEMENT AMONG THE U.S. NUCLEAR REGULATORY COMMISSION, THE ADVISORY COUNCIL ON HISTORIC PRESERVATION, THE WYOMING STATE HISTORIC PRESERVATION OFFICE, THE BUREAU OF LAND MANAGEMENT–NEW CASTLE FIELD OFFICE, AND STRATA ENERGY, INC., REGARDING THE ROSS IN SITU URANIUM RECOVERY PROJECT IN CROOK COUNTY, WYOMING

WHEREAS, this Programmatic Agreement (PA or "Agreement") addresses the federal undertaking (Undertaking) regarding the issuance of a license for the Ross In Situ Uranium Recovery (ISR) Project (Ross Project) pursuant to the U.S. Nuclear Regulatory Commission's (NRC) authority under the Atomic Energy Act of 1954 (AEA), 42 U.S.C. §§ 2011 *et. seq.* for purposes of NRC's compliance with Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. §§ 470 *et. seq.*; and

WHEREAS, on January 4, 2011, Strata Energy, Inc. (Strata) submitted to the NRC for review and approval a new source and byproduct materials license for an ISR project at the Ross Project site located in Crook County, Wyoming; and

WHEREAS, the U.S. Department of the Interior, Bureau of Land Management (BLM), Newcastle, Wyoming Field Office received from Strata on January 21, 2011, a Plan of Operations for the Ross Project for review and approval which requires compliance with Section 106 of NHPA for the Undertaking as defined at 36 CFR § 800.16(y) and pursuant to BLM's authority under the Mining Law of 1872, 30 U.S.C. §§ 22-54 and the Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701-1784; and

WHEREAS, for the purposes of the Undertaking, the NRC is the lead Federal agency for compliance with Section 106 on behalf of the BLM Newcastle Field Office (36 CFR § 800.2(a)(2)) by letter dated November 21, 2011 and is the primary contact for all parties to this PA and Indian Tribes except as noted elsewhere in this document; and

WHEREAS, upon issuance of a license and approval of a mine plan, the Undertaking would use ISR technology to extract uranium and would process the extracted uranium into yellowcake at the Ross Project site, which consists of 1,721 acres (696 ha) located approximately 38 km (24 mi) north of Moorcroft on County Route 68 in Crook County, Wyoming (in portions of Sections 7, 17, 18, and 19, Township 53 North, Range 67 West and portions of Sections 12, 13, and 24, Township 53 North, Range 68 West), as shown in Appendix A; and

WHEREAS, the NRC, by letter dated August 19, 2011, initiated Section 106 consultation with the Wyoming State Historic Preservation Office (WYSHPO); and

WHEREAS, the NRC, in consultation with WYSHPO as provided in 36 CFR § 800.4(a) and 36 CFR § 800.16(d), established the area of potential effects (APE) for the Undertaking as the area

at the Ross Project site and its immediate environs, which may be impacted by activities associated with the construction and operation of the proposed facility. The direct APE is comprised of the areas within the Ross Project boundary that may be directly affected by physical ground disturbance and construction of the Ross Project, and the indirect APE is comprised of the area within three miles of the Ross Project boundary wherein potential visual and audible effects to historic properties may occur, as described in Appendix A; and

WHEREAS, the Phase I area, shown in Figure 3 of Appendix A, encompasses all areas within the direct APE where Strata's physical ground disturbance and construction of the Ross Project is currently proposed to occur; and

WHEREAS, identification of cultural properties has been completed for the Undertaking, including background research of the existing records and Class III and Tribal field surveys within the APE, as described in Appendix B; and

WHEREAS, the NRC has made determinations of eligibility for the National Register of Historic Places (NRHP) for two historic properties within the APE (48CK1603 and 48CK2083) and WYSHPO has concurred with these findings; as described in Appendix B; and

WHEREAS, the NRC has yet to make determinations of eligibility for the NRHP for 32 unevaluated cultural properties within the APE as shown in Table 1-D and Table 3 of Appendix B; and

WHEREAS, effects on all historic properties within the APE cannot be fully determined prior to approval of the Undertaking (36 CFR § 800.14(b)(1)(ii)); and

WHEREAS, the NRC has determined that a phased process for compliance with Section 106 of NHPA is appropriate for the Undertaking, as specifically permitted under 36 CFR § 800.4(b)(2), such that completion of the evaluation of historic properties, determinations of effect on historic properties, and consultation concerning measures to avoid, minimize, or mitigate any adverse effects will be carried out in phases, as set forth in this PA; and

WHEREAS, by letter dated April 17, 2013, Strata has submitted an Additional Testing Plan to the NRC to test the two unevaluated sites (48CK2076 and 48CK2073) that are located within the Phase I area for NRHP eligibility and to test the two eligible sites (48CK1603 and 48CK2083) that are located within the Phase I area for effects; and

WHEREAS, the NRC is coordinating with the BLM to review Strata's Additional Testing Plan and, if accepted by the NRC in consultation with WYSHPO, the Additional Testing Plan will be implemented as necessary; and

WHEREAS, the NRC, by letter dated February 9, 2011, invited the following Indian Tribes to participate in Section 106 consultation for the Ross Project: The Apache Tribe of Oklahoma; The Blackfeet Tribe; The Cheyenne and Arapaho Tribes of Oklahoma; The Cheyenne River Sioux Tribe; The Confederated Salish and Kootenai Tribe; The Crow Tribe; The Crow Creek Sioux Tribe; The Eastern Shoshone Tribe; The Flandreau Santee Sioux Tribe; The Fort Belknap Community; The Fort Peck Assiniboine and Sioux Tribes; The Kiowa Indian Tribe of Oklahoma; The Lower Brule Sioux Tribe; The Northern Arapaho Tribe; The Northern Cheyenne Tribe; The Oglala Sioux Tribe; The Rosebud Sioux Tribe; The Santee Sioux Tribe of Nebraska; The

Sisseton-Wahpeton Sioux Tribe; The Spirit Lake Tribe; The Standing Rock Sioux Tribe, The Three Affiliated Tribes; The Turtle Mountain Band of Chippewa Indians; and the Yankton Sioux Tribe; and

WHEREAS, the following twenty-one tribes are the Ross Project Consulting Tribes: The Blackfeet Tribe; The Cheyenne and Arapaho Tribes of Oklahoma; The Cheyenne River Sioux Tribe; The Confederated Salish and Kootenai Tribe; The Crow Tribe; The Crow Creek Sioux Tribe; The Eastern Shoshone Tribe; The Flandreau Santee Sioux Tribe; The Fort Belknap Community; The Fort Peck Assiniboine and Sioux Tribes; The Lower Brule Sioux Tribe; The Northern Arapaho Tribe; The Northern Cheyenne Tribe; The Oglala Sioux Tribe; The Rosebud Sioux Tribe; The Santee Sioux Tribe of Nebraska; The Sisseton-Wahpeton Sioux Tribe; The Standing Rock Sioux Tribe, The Three Affiliated Tribes; The Turtle Mountain Band of Chippewa Indians; and the Yankton Sioux Tribe; and

WHEREAS, the applicable requirements of NHPA, the American Indian Religious Freedom Act, 42 U.S.C. 1996 *et. seq.*, the Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 *et. seq.* and 43 CFR § 10 (NAGPRA), and the Archaeological Resources Protection Act, 16 U.S.C 1979 *et. seq.* (ARPA) have been considered in this Agreement and this Agreement does not waive the responsibilities of the Signatories and Invited Signatory under these Acts and regulations; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1)(i)(C), the NRC, by letter dated September 19, 2013, has invited the Advisory Council on Historic Preservation (ACHP or "Council") to participate in Section 106 consultation and development of this PA and the Council, by letter dated October 28, 2013, accepted the invitation and is a Signatory; and

WHEREAS, the NRC, by letters dated September 19, 2013, invited each of the Ross Project Consulting Tribes to participate in the development of this PA and representatives from The Cheyenne and Arapaho Tribes of Oklahoma, The Cheyenne River Sioux Tribe, The Chippewa Cree Tribe, The Fort Peck Assiniboine and Sioux Tribes, and The Northern Cheyenne Tribe, participated; and

WHEREAS, each of the Ross Project Consulting Tribes will be invited to sign the PA as a Concurring Party; and

WHEREAS, the NRC, by letter dated September 19, 2013, invited the Crook County Museum District and the Alliance for Historic Wyoming, to participate in the development of this PA, and no response was received; and

WHEREAS, by email dated November 8, 2013, the National Park Service—Devils Tower National Monument informed the NRC that it would like to be involved with the development of the PA and subsequently participated in the development of this PA; and

WHEREAS, Strata has participated in the development of this PA, shall implement the Undertaking in accordance with this PA, and will be invited to sign the PA as an Invited Signatory; and

FINAL DRAFT FOR COMMENT

WHEREAS, the NRC, WYSHPO, ACHP, BLM, and Strata are collectively hereafter called "Signatories;" and

WHEREAS, the Signatories, Invited Signatory, and Concurring Parties are collectively referred to as the "Parties"; and

WHEREAS, the refusal of any Invited Signatory or Invited Concurring Party to sign this PA does not invalidate the PA;

NOW, THEREFORE, the NRC, WYSHPO, ACHP, and BLM agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on historic properties.

STIPULATIONS

A. GENERAL STIPULATIONS

1. The NRC will require as a condition of any license issued to Strata, and the BLM will require as a condition of approval of Strata's Plan of Operations, that Strata complies with all stipulations and other provisions in this PA.
2. Strata shall fund all required fieldwork, analysis, reporting, curation, and mitigation necessary to comply with this PA.
3. The NRC will ensure that all work undertaken to satisfy the terms of this PA, including all cultural resource inventory reports and documentation, meets the Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42), WYSHPO standards, and ACHP guidance on archaeology found at www.achp.gov/archguide.
4. Strata shall have a qualified archaeologist, as defined in the Secretary of Interior's Professional Qualifications and Standards (48 FR 22716), conduct recordation and testing, prepare testing reports, conduct data recovery, and prepare data recovery reports whenever these activities are required.
5. Strata shall direct all of its employees, contractors, subcontractors, inspectors, monitors, and any authorized additional parties involved in the Ross Project not to search for, retrieve, deface, or impact historic and prehistoric materials (e.g., archaeological materials such as, arrowheads, pottery sherds, petroglyphs) and ensure that they receive training regarding the sensitivity of all historic and cultural resources, both Native American and non-Native American. Strata shall cooperate with the NRC, BLM and the WYSHPO to ensure compliance with ARPA of 1979 as amended (16 U.S.C 470) and NAGPRA (25 U.S.C. 3001) on public lands, and with Wyoming Statute § 36-1-115 on state lands.
6. The NRC will continue to consult with the representatives of the Ross Project Consulting Tribes throughout the implementation of the PA. The Ross Project Consulting Tribes will be invited to participate in the determinations of eligibility for the unevaluated properties, the determination of effect to historic properties, and the development of any plans to avoid, minimize, or mitigate adverse effects to historic properties. Any information

provided by the Ross Project Consulting Tribes on sites of traditional religious and cultural importance will remain confidential to the greatest extent permitted by law.

7. For each Ross Project Phase, all cultural resources that may be affected by that stage of the Undertaking will be evaluated by the NRC in consultation with the Parties and Ross Project Consulting Tribes pursuant to 36 CFR § 800.4(c)(1) if not previously evaluated.

8. Strata shall provide to the BLM Newcastle Field Office point of contact copies of all reports required to be provided to the NRC pursuant to the PA. The BLM shall review all reports concurrently with the NRC. The NRC will develop schedules and coordinate with the BLM when fulfilling the NRC's PA responsibilities The NRC may designate the BLM staff as the local point of contact to address unanticipated discoveries or other tasks as needed.

B. CONTINUING DETERMINATIONS OF ELIGIBILITY

1. Testing Phase I Area Properties for NRHP Eligibility

   a. Strata shall complete recordation and evaluation of 48CK2087, 48CK2229, 48CK2230, and 48CK2231 (see Table 1-A of Appendix B) and prepare a report on this inventory. If any of these sites are located within the Phase I area of the Ross Project, then Strata shall submit a Supplement to the Additional Testing Plan to the NRC to include those sites.

   b. Upon receipt of Strata's Supplement to the Additional Testing Plan, the NRC and BLM will review the plan and request any corrections or modifications from Strata within 30 days of receipt. If no Supplement to the Additional Testing Plan is necessary, the NRC in coordination with BLM will review the existing plan and request any corrections or modifications from Strata within 30 days following notification that a Supplement is not required. During review of the testing plan, the NRC will consult with Strata concerning whether any sites or portions of sites may be avoided. If avoidance is possible, the testing plan shall be revised to include a map and documentation to support this avoidance.

   c. The NRC will then distribute the Additional Testing Plan to the Parties (excluding WYSHPO) and Ross Project Consulting Tribes for a 30 day review and comment period. The NRC will consider any comments received in writing from the Parties or the Ross Project Consulting Tribes within the specified review period.

   d. The NRC will then submit the final Additional Testing Plan to the WYSHPO for a 30 day review and concurrence. Copies of this correspondence will be sent to the other Parties and Ross Project Consulting Tribes.

   e. If the WYSHPO concurs with the NRC's final Additional Testing Plan or fails to respond within 30 days, the NRC will notify Strata in writing that it may proceed with the final Additional Testing Plan.

   f. The NRC will consult to resolve any comments or objections regarding the final Additional Testing Plan received in writing from the WYSHPO within the 30 day review period. If a dispute arises, it will be resolved in accordance with Stipulation I (Dispute Resolution).

FINAL DRAFT FOR COMMENT

2. Testing New Phase Area Unevaluated Properties for NRHP Eligibility
   a. Strata shall not conduct ground disturbance activities beyond the boundaries of the Phase I area (see Appendix A, Figure 3) without first notifying the NRC and fulfilling the relevant requirements set forth in this Agreement.
   b. If ground disturbance activities will occur beyond the boundaries of the Phase I area, then, consistent with the phased process for Section 106 compliance under this PA, Strata shall submit a Notice of Intent (NOI) to the NRC. The NOI shall state Strata's intent to prepare a plan for testing the eligibility of any unevaluated properties within the New Phase area or the NOI shall demonstrate that all the previously identified properties within the New Phase area will be avoided by Strata. The NOI shall be submitted at least three months prior to the testing plan's proposed submission date so that the NRC and BLM can appropriately allocate staff resources to the extent possible, acknowledging that additional time may be necessary in the event that NRC and BLM staff resources are limited due to conditions beyond the staff's control. If the NOI demonstrates that all the previously identified properties within the New Phase area will be avoided by Strata and the NRC staff, in coordination with BLM, agree, the NRC will notify Strata within 120 days of receipt of the NOI that it may proceed with its proposed activities.
   c. Strata's NOI shall include a description of the area of ground disturbance activities for the New Phase. Strata shall delineate the New Phase area with township/section/range, GPS data points, GIS map, or other land survey techniques such that the New Phase area can be reproducibly defined and illustrated with appropriate graphic materials and sufficient documentation to enable any reviewer to readily understand its scope and basis.
   d. Upon receipt of Strata's testing plan, the NRC in coordination with the BLM will review the plan and request any corrections or modifications from Strata within 30 days of receipt.
   e. Prior to accepting Strata's testing plan, the NRC will consult with Strata to determine if the unevaluated properties can be avoided in the proposed project phase. If any properties in the original testing plan can be avoided, Strata shall submit a revised testing plan, including a map and sufficient documentation to support this avoidance determination.
   f. The NRC will distribute the revised testing plan to the Parties (excluding WYSHPO) and Ross Project Consulting Tribes for a 30 day review and comment period. The NRC will consider any comments received in writing within the specified review period.
   g. The NRC will then submit the final testing plan to the WYSHPO for a 30 day review and concurrence, copying the other Parties and Ross Project Consulting Tribes on this correspondence.
   h. If the WYSHPO concurs with the NRC's final testing plan or fails to respond within 30 days, the NRC will notify Strata in writing that it may proceed with the testing plan.
   i. The NRC will consult to resolve any comments or objections received in writing from WYSHPO within the 30 day review period regarding the final testing plan. If a

dispute arises, it will be resolved in accordance with Stipulation I (Dispute Resolution).

3. Determination of Eligibility
   a. In accordance with an approved final testing plan from Sections B.1 or B.2, Strata shall evaluate and make NRHP eligibility recommendations for unevaluated properties.
   b. Upon receipt of Strata's eligibility recommendations, the NRC in coordination with BLM will review the recommendations and request any corrections or modifications from Strata within 30 days of receipt.
   c. The NRC will then distribute revised eligibility determinations to the Parties (excluding WYSHPO) and Ross Project Consulting Tribes for a 30 day review period. The NRC will consider any comments received in writing from the Parties and the Ross Project Consulting Tribes within the specified review period.
   d. The NRC will then provide its eligibility determinations to the WYSHPO for a 30 day review and concurrence, copying the other Parties and Ross Project Consulting Tribes on this correspondence. The NRC will consult to resolve any objections regarding eligibility determinations received from the WYSHPO or the Council in writing within the specified review period.
   e. If the WYSHPO concurs with the NRC's eligibility determinations, or if no written objections are received within the 30 day review period, the NRC's eligibility determinations are final.
   f. If the WYSHPO and NRC agree that a cultural resource is not eligible for the NRHP, no further review or consideration under this PA will be required for the cultural resource. If, after appropriate consultation, the WYSHPO and NRC agree that the property is eligible, then a determination of effect will be made in accordance with Stipulation C.
   g. In accordance with 36 CFR § 800.4(c)(2), if there is disagreement regarding eligibility between the NRC and the WYSHPO, and that disagreement cannot be resolved after further consultation, or if the ACHP so requests, the NRC will refer the property(ies) in question to the Keeper of the National Register and request a formal determination of eligibility. The Keeper's decision is final.
4. Sites of Traditional and Cultural Importance
   a. The NRC, in consultation with the WYSHPO, will make NRHP eligibility determinations and effects determinations for the 18 properties identified during the Tribal field survey (see Table 3 of Appendix B).
   b. The NRC will prepare a report documenting its eligibility determinations for the 18 properties and submit it to the WYSHPO for a 30 day review and concurrence, copying other Parties and the Ross Project Consulting Tribes on this correspondence.
   c. If the WYSHPO concurs with the NRC's eligibility determinations, or if the WYSHPO or Council do not object to the NRC's eligibility determinations within the 30 day review period, the NRC's eligibility determinations are final.

d. The NRC will consult to resolve any written objections from the WYSHPO or the Council received during the 30 day review period regarding eligibility determinations.

e. For any unevaluated cultural resources that are of concern to the Ross Project Consulting Tribes, the NRC will conduct further consultation with Ross Project Consulting Tribes, and, if needed, schedule additional site visits in order to complete eligibility assessments.

f. If the WYSHPO and NRC agree that a cultural resource is not eligible for the NRHP, no further review or consideration under this PA will be required for the cultural resource. If the WYSHPO and NRC agree that the property is eligible, then a determination of effect will be made in accordance with Stipulation C.

g. In accordance with 36 CFR § 800.4(c)(2), if there is disagreement regarding eligibility between the NRC and the WYSHPO, and that disagreement cannot be resolved after further consultation, or if the ACHP so requests, the NRC will refer the property(ies) in question to the Keeper of the National Register and request a formal determination of eligibility. The Keeper's decision is final.

C. CONTINUING ASSESSMENT OF EFFECTS

1. The NRC, in consultation with the Parties and Ross Project Consulting Tribes will make determinations of the effects of the proposed Undertaking on the viewshed of historic properties within the three-mile indirect APE.
2. The NRC, in consultation with the Parties and Ross Project Consulting Tribes will make determinations of the visual and audible adverse effects of the proposed Undertaking of historic properties within the three-mile indirect APE of the Undertaking.
3. Testing Historic Properties for Direct Adverse Effects

   a. Following eligibility determinations, if additional testing is needed to assess the effects of the proposed Project Phase on a historic property, Strata shall submit to the NRC a testing plan to determine the direct (i.e., physical disturbance) adverse effects to historic properties that cannot be avoided.

   b. Upon receipt of Strata's testing plan, the NRC in coordination with the BLM will review the plan and request any corrections or modifications from Strata within 30 days of receipt.

   c. Prior to accepting Strata's testing plan, the NRC will consult with Strata to determine if the historic properties can be avoided. If any historic properties in the testing plan can be avoided, Strata shall submit a revised testing plan, including a map and sufficient documentation to support this avoidance determination.

   d. The NRC will distribute the revised testing plan to the Parties (excluding WYSHPO) and the Ross Project Consulting Tribes for a 30 day review period. The NRC will consider any comments received in writing within the specified review period.

   e. The NRC will then distribute the final testing plan to the WYSHPO for a 30 day review and comment period, copying the other Parties and the Ross Project Consulting Tribes on this correspondence.

f. If the WYSHPO concurs with the NRC's final testing plan or fails to respond within 30 days, the NRC will notify Strata that it may proceed with the testing plan, and Strata shall submit the results of the testing to the NRC.

g. The NRC will consult to resolve any comments or objections received in writing from the WYSHPO within the 30 day review period regarding the testing plan. If a dispute arises, it will be resolved in accordance with Stipulation I (Dispute Resolution).

4. Assessment of Effects

a. Strata shall have a qualified archaeologist conduct the testing in accordance with the approved adverse effects testing plan from Stipulation C.3 and shall submit a report to the NRC that documents Strata's evaluation and recommendations, which the NRC may use in making determinations of effect on identified historic properties within the area of ground disturbance activities for each Ross Project phase.

b. Upon receipt of Strata's recommended determinations of effect, the NRC in coordination with the BLM will review those determinations and request any corrections or modifications from Strata within 30 days of receipt.

c. The NRC will then distribute its determinations of effect and the associated documentation [pursuant to 36 CFR §§ 800.5 and 800.6(a)(3)] to the Parties (excluding WYSHPO) and the Ross Project Consulting Tribes for a 30 day review period. The NRC will consider any comments received in writing within the specified review period.

d. The NRC will then distribute the determinations of effect to the WYSHPO for a 30 day review period, copying the other Parties and the Ross Project Consulting Tribes on this correspondence.

e. If the WYSHPO concurs with NRC's determinations of effect, or if no written objections are received from the Parties or the Ross Project Consulting Tribes within the 30 day review period, the effects determinations are final.

f. The NRC will consult to resolve any written objections received from the Parties or the Ross Project Consulting Tribes regarding determinations of effect. If a dispute arises, it will be resolved in accordance with 36 CFR § 800.5(c)(2) or Stipulation I (Dispute Resolution).

g. If any eligible properties will be adversely affected, plans to avoid, minimize, or mitigate the adverse effects will be developed in accordance with the Stipulation D of this PA.

D. AVOIDANCE, MINIMIZATION and MITIGATION of ADVERSE EFFECTS

1. Avoidance of Adverse Effects:

Once the assessment of adverse effects to a historic property has been finalized per Stipulation C, Strata shall notify the NRC within 30 days if it can avoid the historic property that would be adversely affected within the area of ground disturbance activities for each Ross Project Phase, including properties of traditional religious and cultural significance to the Tribes. Potential avoidance measures include, but are not limited to, relocating pipelines, roads, facilities, monitoring wells, and other disturbances.

2. Development of Plan for the Minimization and Mitigation of Adverse Effects

   a. If the NRC determines adverse effects to historic properties within the area of ground disturbance activities for any Ross Project Phase cannot be avoided, for each Phase of the Undertaking, the NRC will consult with the Parties and Ross Project Consulting Tribes to identify those measures to be implemented by Strata to minimize and/or mitigate adverse effects to affected historic properties. A wide range of options to minimize and/or mitigate adverse effects shall be considered, including but not limited to the following:

      i. For historic properties that are archaeological in nature and significant for their research data potential (Eligibility Criterion D, National Register of Historic Places), the treatment measures may follow standard mitigation through data recovery. Mitigation plan(s) for data recovery shall include, at a minimum, a research design with provisions for data recovery and recordation, analysis, reporting, and curation of resulting collection and records, and shall be consistent with the *Secretary of Interior's Standards and Guidelines* (48 FR 44734-44737). Mitigation plan(s) must be consistent with easement and permit requirements of other agencies, when applicable. To the extent possible, mitigation plan(s) should group related sites or areas, so that treatment of related resources can be considered in context, and to minimize the burden of review and approval by agencies.

      ii. Mitigation plan(s) for those resources relating to properties eligible under Criteria A, B and C, or that are significant for values other than their potential research value, if warranted, shall specify approaches for treatment or mitigation of the property in accordance with the principles, standards, and guidelines appropriate to the resource. This may include, but not be limited to, use of such approaches as relocating the historic property, re-landscaping to reduce effects, public interpretation, ethnographic recordation, oral history, archival research, or prescribing use of a component or activity of this Undertaking in such a way as to minimize effects to historic properties or to those concerned about the effects of that component or activity. Methods of recordation and documentation described in the mitigation plan(s) shall conform with the *Secretary of the Interior's Standards for Architectural and Engineering Documentation* (48 FR 44730-44734) or other standards specified by NRC.

      iii. In lieu of standard mitigation approaches described above, mitigation plan(s) may adopt other alternative approaches to avoid, minimize or mitigate effects to historic properties, including, but not limited to, assisting in the development of Tribal historic preservation plans, developing detailed historic contexts for the region, developing educational materials, purchasing properties containing historic resources, or developing historic property management plans.

   b. The NRC shall consult with the Ross Project Consulting Tribes regarding minimization and/or mitigation of indirect effects to historic properties of traditional religious and cultural importance.

c. Meetings and conference calls shall be scheduled as needed to develop mitigation measures for the Undertaking. Meetings and telephone conferences shall involve all or part of the Parties and Ross Project Consulting Tribes, as appropriate.

d. Following the development of measures to minimize and/or mitigate adverse effects, Strata shall prepare a Mitigation Plan. The Mitigation Plan shall identify minimization and/or mitigation measures to address the adverse effects of the Undertaking on each individual historic property.

i. The Mitigation Plan shall contain a map of all proposed effects for that Project Phase, a description of the effects on each historic property, and a description of the proposed treatment for each historic property.

ii. If monitoring by a qualified archaeologist and/or by Tribal monitors is part of the strategy for identifying and resolving adverse effects, the Mitigation Plan shall include a Monitoring Plan. The objective of monitoring is to protect extant sites from construction impacts, identify at the time of discovery any archaeological materials exposed during ground disturbance, and protect such resources from damage until the procedures for Discoveries per Stipulation E are implemented.

iii. If data recovery is part of the strategy for resolving adverse effects, the Mitigation Plan shall specify all details of the research design, field and laboratory work methodology (including mapping, geomorphological studies, controlled scientific excavation methods, analyses of data recovered, and photographic documentation), and report preparation.

e. The NRC in coordination with the BLM will review the Mitigation Plan developed by Strata and request any corrections or modifications within 30 days of receipt.

f. The NRC will distribute the Mitigation Plan to the Parties (excluding WYSHPO) and the Ross Project Consulting Tribes. The NRC will consider any comments received in writing from the Parties (excluding WYSHPO) and the Ross Project Consulting Tribes within the specified review period.

g. The NRC will then distribute the final Mitigation Plan to the WYSHPO for a 30 day review period, copying the other Parties, the Ross Project Consulting Tribes on this correspondence.

h. Upon final concurrence by the WYSHPO, or if WYSHPO fails to respond in writing within 30 days, and no other objections from the Parties or the Ross Project Consulting Tribes are received, the final Mitigation Plan will be appended to this PA.

i. The NRC will consult to resolve any written comments or objections received from the Parties and the Ross Project Consulting Tribes regarding the final Mitigation Plan within the WYSHPO's 30 day review period. If a dispute arises, it will be resolved in accordance with 36 CFR § 800.7 or Stipulation I (Dispute Resolution).

j. The NRC will notify the Parties and the Ross Project Consulting Tribes of the approval of any Mitigation Plan.

3. Implementation of Mitigation Plan

a. For any data recovery on BLM-administered lands, the archaeologist shall have a BLM Cultural Resource Use permit for Excavation and/or Removal.

b. For data recovery on State lands, the archaeologist shall have an Authorization for Archaeological Investigations on State Lands.

c. Upon completion of data recovery fieldwork, Strata shall submit a data recovery report documenting implementation and results.

d. The NRC in coordination with the BLM will review the data recovery report developed by Strata and request any corrections or modifications within 30 days of receipt, allowing additional time if NRC/BLM fieldwork inspection is needed and is not feasible within the 30 day review period.

e. The NRC will then distribute the data recovery report or revised report to the Parties (excluding WYSHPO) and Ross Project Consulting Tribes for a 30 day review and comment period. The NRC will consider any written comments received from the Parties and the Ross Project Consulting Tribes.

f. The NRC will submit the final data recovery report to WYSHPO for a 30 day review and concurrence, copying the other Parties and Ross Project Consulting Tribes on this correspondence.

g. If the WYSHPO concurs with NRC's data recovery report or fails to respond within 30 days, the NRC shall notify Strata that the data recovery report is final. After such notification, Strata may proceed with implementation of that Phase of the Undertaking.

h. The NRC will consult to resolve any comments received in writing from the WYSHPO during the WYSHPO's 30 day review period. If a dispute arises, it will be resolved in accordance with Stipulation I (Dispute Resolution).

i. For other mitigation measures specified in the Mitigation Plan that result in a product or process that requires review and acceptance, the process of review and acceptance shall be specified in the Mitigation Plan. Strata shall not proceed with implementation of ground disturbance activities outside of the Project Phase area prior to completion of such review and acceptance.

E. Curation

a. BLM will ensure that curation of all records and other archaeological items resulting from identification and data recovery efforts on public (BLM) and State land is completed in accordance with 36 CFR § 79 and the provisions of 43 CFR § 10 (NAGPRA). All archaeological materials recovered from Federal and State land shall be curated at the University of Wyoming Archaeological Repository. Strata shall provide documentation of the curation of the materials to the NRC, BLM, and WYSHPO within 60 days of acceptance of the final cultural resource inventory report and/or data recovery report.

b. BLM will encourage private landowners to curate archaeological materials recovered from their lands in accordance with Federal curation policies. If private landowners agree to curate archaeological materials recovered from their lands, the curation shall be done in accordance with Federal curation policies. Materials from private lands to be returned to private landowners shall be maintained in accordance with 36 CFR § 79 until all necessary analysis has been completed. Strata shall provide

documentation of the disposition of private collections to the NRC, BLM, and WYSHPO.

F. DISCOVERIES

1. Inadvertent Discoveries of Historic and Cultural Resources

   a. If previously unknown cultural resources, including archaeological, are discovered during implementation of the Ross Project, or previously known properties will be affected in an unanticipated manner, all construction activities will cease within 150 feet of the area of discovery to avoid or minimize harm to the resource, and Strata shall immediately notify the NRC and the WYSHPO. Activity in the area will cease until NRC, in consultation with the Parties and Ross Project Consulting Tribes, can evaluate and, if necessary, authorize steps to mitigate impacts to the new discovery. Strata shall have any discovered materials evaluated for NRHP eligibility by a professional cultural resource specialist meeting the Secretary of Interior's Standards for Archaeology and History. Documentation of the discovery and evaluation will be promptly provided to the NRC in order for the NRC, in consultation with the WYSHPO, ACHP, BLM, and the Ross Project Consulting Tribes, to make a determination of eligibility and effect. Inadvertent discoveries may include artifacts, bone, features, or concentrations of these materials outside previously identified sites or in and adjacent to previously identified eligible and not eligible sites. Discoveries may also include stones and groups of stones that are out of place in their sedimentary contexts and may be parts of stone features. Discoveries may also include changes in soil color, texture, or content suspected to be of anthropic origin, such as burned soil, ash, or charcoal fragments.

   b. If a cultural resource monitor or Tribal monitor is present, the monitor shall have the authority to temporarily halt construction operations within 150 feet of the find or exposed resource and shall flag or otherwise mark the area of avoidance. If a monitor is not present, Strata shall halt work and mark the location for avoidance.

   c. Strata shall have a qualified archaeologist and, if needed, a Tribal monitor, inspect the area for additional resources, document the discovery, make recommendations concerning eligibility, and submit the findings to the NRC. The Parties and Ross Project Consulting Tribes shall consult to determine what data recovery or other mitigation may be needed.

   d. Work may continue in other areas of the site; however, construction shall not resume in the area of discovery unless the NRC has issued a written Notice to Proceed.

   e. Evaluation and mitigation will be carried out by NRC in consultation with the WYSHPO, Ross Project Consulting Tribes, BLM, ACHP, and Strata as expeditiously as possible in accordance with 36 CFR § 800.13(b).

2. Inadvertent Discoveries of Human Remains

   a. In the event human remains are discovered on private land during implementation of the Ross Project, all work within 300 feet of the discovery will cease, the area will be secured, and Strata shall immediately contact NRC, who will notify the Crook County Sheriff's Office and Coroner's Office of the discovery per W.S. 7-4-104.

b. Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on Federal land will be handled according to Section 3 of NAGPRA and its implementing regulations (43 CFR § 10). In the event that human remains are discovered on Federal land during implementation of the Ross Project, all work within 300 feet of the discovery will cease, the area will be secured, and BLM shall be contacted immediately. BLM will be responsible for compliance with the provisions of NAGPRA on Federal land. Native American human remains, funerary objects, sacred objects, or items of cultural patrimony found on state or private land will be handled in accordance with procedures agreed upon by the NRC and WYSHPO for State and private land. If non-Native American human remains are found on Federal land, Strata shall immediately notify the NRC and BLM and BLM will treat such remains in accordance with applicable law. The NRC, BLM, and Strata recognize that any human remains, funerary objects, sacred objects, or items of cultural patrimony encountered during construction should be treated with dignity and respect.

G. CONFIDENTIALITY OF CULTURAL RESOURCE DATA

Cultural resource data, including data concerning the location and nature of historic properties and properties of religious and cultural significance, will be treated as confidential by all Parties and any additional parties involved in the Ross Project, including but not limited to employees, contractors, and subcontractors of Strata. These data shall be protected from public disclosure to the greatest extent permitted by law, including conformance with Section 304 of the NHPA, as amended, Section 9 of the ARPA, and Executive Order No. 13007 on Indian Sacred Sites (Federal Register, Vol. 61 No. 104, May 24, 1996). Confidentiality concerns for properties that have traditional religious and cultural importance to the Ross Project Consulting Tribes will be respected and will remain confidential to the greatest extent permitted by law. Duplication or distribution of cultural resource data from BLM-managed lands by any Party requires written authorization from the BLM Newcastle Field Manager.

H. ANNUAL REPORT AND EVALUATION

1. On or before January 1 of each year, beginning in 2015, unless the Parties agree in writing that the terms of this PA have been fulfilled, Strata shall prepare and provide a letter report to the NRC detailing how the applicable terms of the PA are being implemented. Upon acceptance, Strata shall provide this annual report to the Parties and Ross Project Consulting Tribes. The Parties may provide comments on the report to Strata within 30 days of receipt, and Strata shall distribute all comments to the Parties.
2. Strata shall coordinate a meeting or conference call of the Parties and Ross Project Consulting Tribes, in coordination with the NRC, within 60 days after providing the annual report for the first five (5) years, and (if the PA is still in effect) every third year after that, unless the Parties agree to another timeframe. As appropriate, Parties may request a separate meeting to discuss the annual report. The purpose is to review implementation and achieved outcomes of the terms of this PA and to discuss the annual report, as needed.

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I. DISPUTE RESOLUTION

1. Any Signatory to this PA who objects to an action under this PA, or the implementation of the measures stipulated to in this PA, shall provide written notice to the NRC within 30 days of becoming aware of an action. The NRC will consult with the objecting Signatory to this PA to resolve the objection, unless otherwise specified in this document. If the NRC determines that the objection cannot be resolved, the NRC will forward all documentation relevant to the dispute to the ACHP as well as the other Parties and Ross Project Consulting Tribes, including NRC's proposed response to the objection. The objecting Signatory must provide reasons for, and a justification of, its objection at the time it initially submits its objection to the NRC. Within 30 days after receipt of all pertinent documentation, the ACHP shall either:
   a. Advise the NRC that the ACHP concurs with the NRC's proposed final decision, whereupon the NRC will respond accordingly;
   b. Provide the NRC with recommendations, which the NRC will take into account in reaching a final decision regarding the dispute; or
   c. Notify the NRC that it will comment within an additional 30 days, in accordance with 36 CFR § 800.7(c)(4). Any ACHP comment provided in the response to such a request will be taken into account, and responded to, by the NRC in accordance with 36 CFR § 800.7(c)(4) with reference to the subject of the dispute.
   d. Should the ACHP not exercise one of the above options within forty-five (45) days after receipt of all pertinent documentation, the NRC may proceed with its proposed response to the objection.
2. Any recommendation or comment provided by the ACHP will be understood to pertain only to the subject of the dispute. The responsibility to carry out all actions under this PA that are not the subject of the dispute shall remain unchanged.

J. AMENDMENT

Any Signatory to this PA may request that it be amended, whereupon the Signatories will consult to reach agreement. Such amendment shall be effective upon the signature of all Signatories to this PA, and the amendment shall be appended to the PA as an Appendix.

K. TERMINATION

1. Any Signatory to this PA may initiate termination by providing written notice to the other Signatories of their intent. After notification by the initiating Signatory, the remaining Signatories shall have 60 business days to consult to seek agreement on amendments or any other actions that would address the issues and avoid termination. If such consultation fails, the termination will go into effect at the end of the 60-day period, unless all the Signatories agree to a longer period.
2. In the event of termination, the Signatories will comply with any applicable requirements of 36 CFR §§ 800.4 through 800.6 with regard to the original Undertaking covered by this PA.

L. DURATION OF AGREEMENT

This PA shall remain in effect for 20 years from its date of execution by the Signatories (last date of signature), or until completion of the work stipulated, whichever comes first, unless extended by agreement among the Signatories.

M. ANTI DEFICIENCY ACT

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (31 U.S.C. §1341). If compliance with the Anti-Deficiency Act alters or impairs the NRC's ability to implement the stipulations of this Agreement, the NRC will consult in accordance with the amendment and termination procedures found in this Agreement.

N. GENERAL PROVISIONS

1. **Entirety of Agreement.** This PA, consisting of twenty (20) pages, represents the entire and integrated agreement between the parties and supersedes all prior negotiations, representations and agreements, whether written or oral, regarding compliance with Section 106 of NHPA.
2. **Prior Approval.** This PA shall not be binding upon any party unless this PA has been reduced to writing before performance begins as described under the terms of this PA, and unless the PA is approved as to form by the Wyoming Attorney General or his representative.
3. **Severability.** Should any portion of this PA be judicially determined to be illegal or unenforceable, the remainder of the PA shall continue in full force and effect, and any party may renegotiate the terms affected by the severance.
4. **Sovereign Immunity**. The State of Wyoming, the WYSHPO, the NRC, the BLM, the ACHP, and Ross Project Consulting Tribes do not waive their sovereign or governmental immunity by entering into this PA and each fully retains all immunities and defenses provided by law with respect to any action based on or occurring as a result of the PA.
5. **Indemnification.** Each Signatory to this PA shall assume the risk of any liability arising from its own conduct. Each Signatory agrees they are not obligated to insure, defend or indemnify the other Signatories to this PA.

Execution of this PA by the NRC, BLM, ACHP, WYSHPO, Strata, Ross Project Consulting Tribes, the submission of documentation and filing of this PA with the ACHP pursuant to 36 CFR § 800.6(b)(1)(iv) prior to the Signatories' approval of the Undertaking, and implementation of its terms, are evidence that the NRC has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

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FINAL DRAFT FOR COMMENT

SIGNATURES: In witness thereof, the Signatories to this PA through their duly authorized representatives have executed this PA on the days and dates set out below, and certify that they have read, understood, and agreed to the terms and conditions of this PA as set forth herein.

The effective date of this PA is the date of the last signature affixed to this page.

Federal Agencies

The U.S. Nuclear Regulatory Commission

_____

NRC Official Date

The U.S. Department of the Interior, Bureau of Land Management, Newcastle Field Office

_____

BLM Official Date

Wyoming State Historic Preservation Officer

_____

Mary Hopkins, SHPO Date

Advisory Council on Historic Preservation

_____

John M. Fowler, Executive Director Date

Strata Energy, Inc.

_____

Name and title Date

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Approval as to Form:
Wyoming Attorney General's Office

_____

S. Jane Caton, Date
Senior Assistant Attorney General

Concurring Parties:

Blackfeet Tribe

_____

Name and title Date

Cheyenne and Arapaho Tribes

_____

Name and title Date

Cheyenne River Sioux Tribe

_____

Name and title Date

Confederated Salish and Kootenai Tribe

_____

Name and title Date

Apsaalooke (Crow) Nation

_____

Name and title Date

Crow Creek Sioux Tribe

_____

Name and title Date

Eastern Shoshone Tribe

_____

Name and title Date

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Flandreau-Santee Sioux Tribe

_____

Name and title Date

Fort Belknap Community

_____

Name and title Date

Fort Peck Assiniboine/Sioux

_____

Name and title Date

Lower Brule Sioux Tribe

_____

Name and title Date

Northern Arapaho Tribe

_____

Name and title Date

Northern Cheyenne Tribe

_____

Name and title Date

Oglala Sioux Tribe

_____

Name and title Date

Rosebud Sioux Tribe

_____

Name and title Date

Santee Sioux Tribe of Nebraska

_____

Name and title Date

Sisseton-Wahpeton Oyate Tribes

_____

Name and title Date

Standing Rock Sioux Tribe

_____

Name and title Date

Mandan, Hidatsa & Arikara Nation
Three Affiliated Tribes

_____

Name and title Date

Turtle Mountain Band of Chippewa

_____

Name and title Date

Yankton Sioux Tribe

_____

Name and title Date

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Appendix A

Description of Undertaking and Area of Potential Effects

Undertaking

On January 4, 2011, Strata Energy, Inc. (Strata or the Applicant) submitted to the U.S. Nuclear Regulatory Commission (NRC) a license application to construct and operate the Ross Project, which is a proposed uranium in situ recovery (ISR) facility located in Oshoto, Crook County, Wyoming.

The Atomic Energy Act of 1954, as amended, authorizes the NRC to issue licenses, either as a general or specific license, to qualified applicants for the receipt, possession and use of byproduct and source materials resulting from the removal of uranium ore from its place of deposit in nature. An NRC specific license is issued to a commercial uranium or thorium ISR facility pursuant to NRC implementing regulations listed in Title 10 of the Code of Federal Regulations (10 CFR) Part 40.

On January 21, 2011, Strata submitted to the U.S. Department of the Interior, Bureau of Land Management (BLM), Newcastle, Wyoming Field Office a Plan of Operations for the Ross Project for review and approval.

The Mining Law of 1872, 30 U.S.C. §§ 22-54 authorizes the BLM to review and approve mining plans for use of Federal minerals and the Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701-1784 requires the BLM to manage all BLM-administered lands and minerals for multiple uses.

Ross Project Location and Proposed Activities

The proposed activities consist of constructing and operating an ISR facility at the Ross Project site located in Oshoto, Crook County, Wyoming. Strata is a U.S.-based corporation registered in Wyoming and a wholly owned subsidiary of Peninsula Energy Limited, an Australian registered company. Peninsula Energy is a publicly traded corporation on the Australian Securities Exchange. For this Undertaking, Strata is the Applicant.

As shown in Figure 1, Crook County is located in the northeastern corner of Wyoming, abutted by Montana to the north, South Dakota to the east, Weston County, Wyoming, to the south, and Campbell County, Wyoming to the west. The total area encompassed by Crook County is 2871 square miles. The nearest town to the project is Moorcroft, which is located approximately 22 miles south of the Ross Project. The closest community is Oshoto, which includes 11 residences located within 2 miles (mi) [3.2 kilometers (km)] of the project area. In addition to Moorcroft, the other nearest major urban centers include Sundance, Hulett, and Pine Haven, all of which are located in Wyoming. The largest population in those nearby urban centers is in Sundance with a 2010 population of 2602 persons (Strata, 2011).

As shown in Figure 2, the Ross Project comprises approximately 696 hectares (ha) [1,721 acres (ac)]. Surface ownership of land located within the Ross Project is as follows: private entities,

553 ha [1367.2 ac]; State of Wyoming, 127 ha [314.1 ac]; and the Federal Government as administered by the BLM, 16 ha [40.0 ac]. Mineral rights are owned by the same entities as the surface rights; however, the distribution differs slightly from that of the surface ownership in that federal mineral rights ownership occurs in several quarter/quarter sections for which surface land is owned by private entities. The Ross Project includes parts of the following sections of the Public Land Survey System:

Section	Township	Range
7, 17, 18 & 19	53 North	67 West
12, 13 & 24	53 North	68 West

The proposed activities for the Ross Project include the construction of wellfields and a central processing plant (CPP) with ancillary equipment. The ancillary equipment includes underground piping from the wellfield to the CPP and from the CPP to the deep disposal wells, two to three dozen header houses, an administrative and warehouse/maintenance building, a chemical and equipment storage area, lined retention ponds, and deep disposal wells. Except for the wellfields, header houses, deep disposal wells and piping, most of the development is limited to a 50-acre area referred to as the "CPP area" within the project.

The Applicant proposes in situ recovery processes for this project. The ISR process involves extracting uranium from underground ore bodies without bringing the ore bodies to the surface by injecting a leaching solution through wells into underground ore bodies to dissolve the uranium. The leaching solution is recovered from the subsurface through the extraction wells and piped to the CPP through a system of underground piping. At the CPP, two generic processes produce the final product, which is referred to as yellowcake.

From the initial construction to final decommissioning, the Applicant-proposed timeline for the Ross Project is approximately 10 years; however, the Applicant also requests processing of uranium-rich resins derived from other ISR operations (either a future Strata facility or a facility operated by another licensee) or other entity (e.g., water treatment resins). The Applicant states that processing of resins outside sources could extend the life of the CPP to 20 years.

The Applicant proposes restoration of the production aquifer and stability monitoring. Restoration of portions of wellfields may occur simultaneously with operations (recovery of uranium) at other wellfields. After restoration is completed and approved by NRC staff, the wellfields will undergo decommissioning and reclamation by removing the piping and other ancillary equipment. Upon completion of operations, all surface facilities that were installed for the Ross Project will be decommissioned to allow unrestricted future use of the property. All equipment not fully decontaminated for unrestricted use will be disposed of at an NRC-licensed facility.

Ross Project Area of Potential Effects

As indicated in the NRC's letters to the Wyoming State Historic Preservation Office and the Advisory Council on Historic Preservation, dated August 19, 2011, the Area of Potential Effects (APE) is the area at the Ross Project site and its immediate environs, which may be impacted by activities associated with the construction and operation of the proposed facility. The direct APE is comprised of the areas within the Ross Project boundary that may be directly affected by physical ground disturbance and construction of the Ross Project, including the Phase I area

shown in Figure 3, and the indirect APE is comprised of the area within three (3) miles of the Ross Project boundary wherein potential visual and audible effects to historic properties may occur.

By letter dated August 27, 2012, Strata provided to the NRC the results of its analysis to identify and assess the potential visual effects to properties located within 3 miles of the Ross Project boundary. The NRC staff's initial review of this analysis will be incorporated into the NRC's *Tribal Field Survey and NRC's Eligibility Determination Report for the Ross In Situ Uranium Recovery Project*.

Reference:

Strata, 2011. Ross ISR Project USNRC License Application, Crook County, Wyoming, prepared by Strata Energy, Inc., Docket No. 040-09091. ADAMS Accession No. ML110120063, January 2011.

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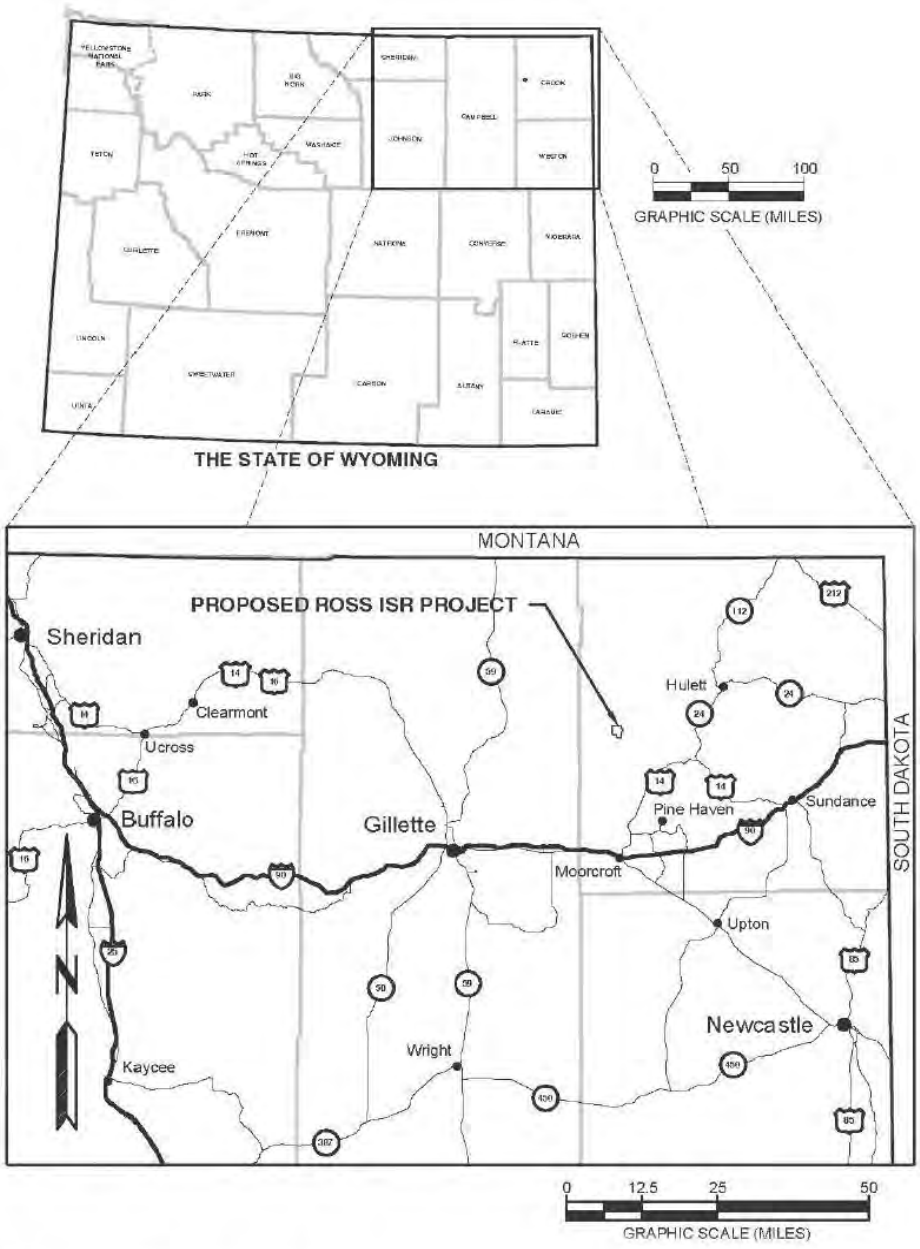

Figure 1 Ross Project Location Map

Source: Figure 1.4-1 of the Ross ISR Project USNRC License Application, Technical Report, Crook County, Wyoming, prepared by Strata Energy, Inc., Docket No. 040-09091. ADAMS Accession No. ML110120063, January 2011.

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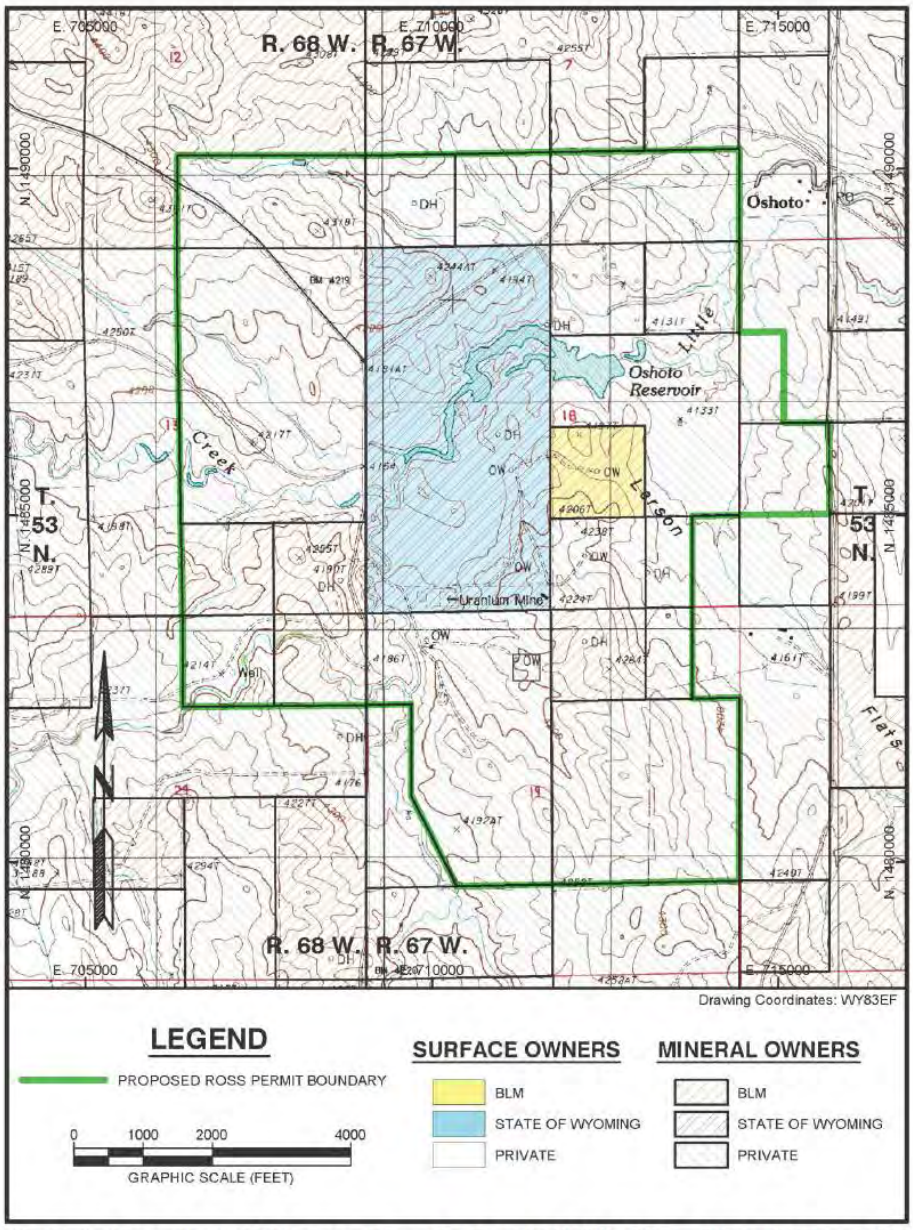

Figure 2 Ross Project License Boundary and Distribution of Land Ownership
Source: Figure 2.1-1 of the Ross ISR Project USNRC License Application, Technical Report, Crook County, Wyoming, prepared by Strata Energy, Inc., Docket No. 040-09091. ADAMS Accession No. ML110120063, January 2011.

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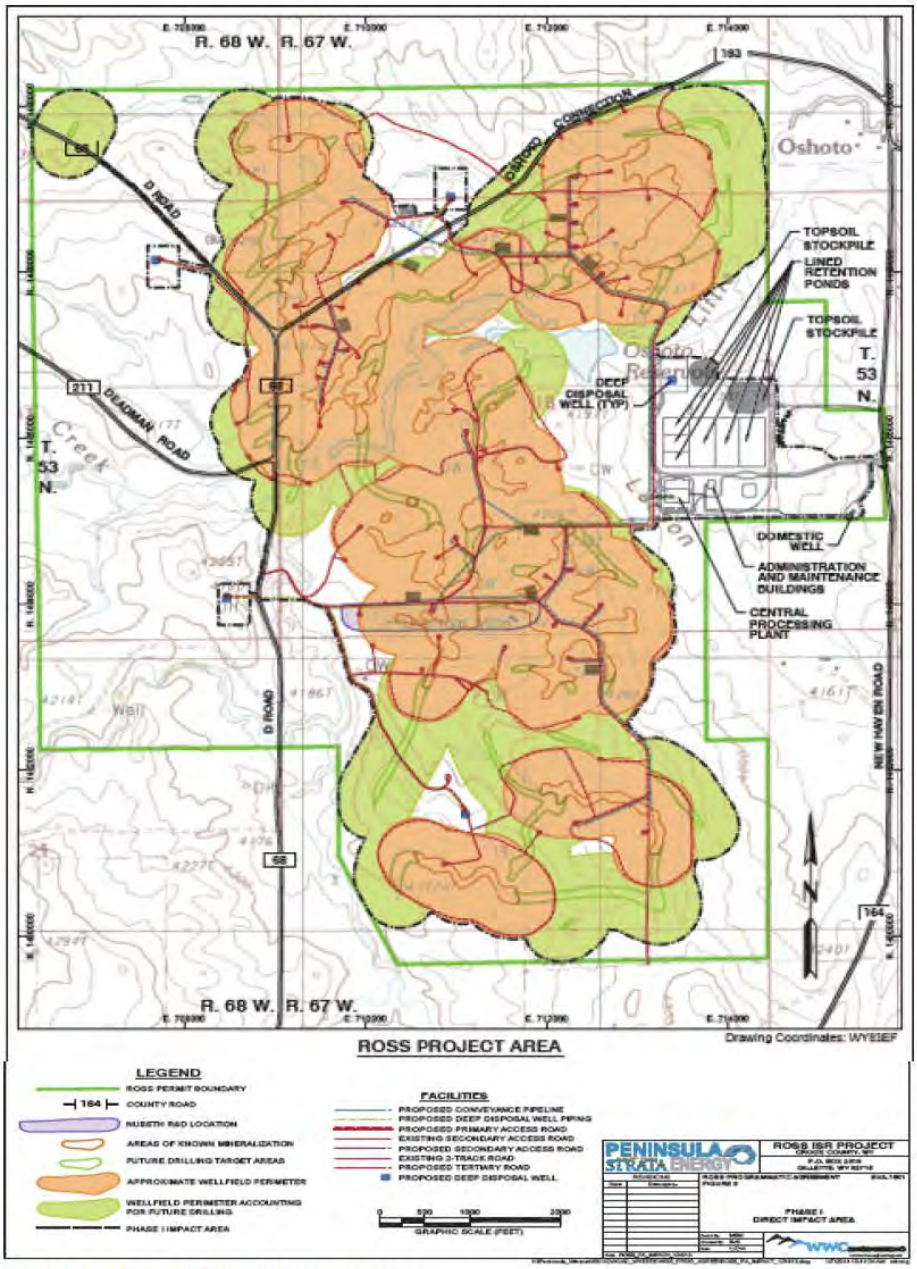

Figure 3 Ross Project Phase I Area

Source: Email to Johari Moore (NRC) from Ben Schiffer [WWC (Strata)]. Re: Request for Additional Information to Develop Draft Programmatic Agreement. Docket No. 040-09091. January 7, 2014.

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Appendix B

Ross Project Cultural Resource Inventories

Cultural Resource Inventory

A Class III Cultural Resource Inventory (Class III Inventory) was conducted in support of the Ross Project in April 2010 and July 2010. The Inventory included a pedestrian survey in transects of 30-m [102-ft] intervals throughout the Ross Project area. Subsurface exposures such as cut banks, anthills, rodent burrows, roads ruts, and cow tracks were examined. Shovel probes were placed at the discretion of the surveyors, primarily in locations where artifacts or features were located or where soil had accumulated. The Inventory focused on landforms where intact sites might be expected, such as intact, stable terraces and their margins, as well as areas of exposure. Site evaluations were not completed for all sites during this Inventory and sites were not assessed for project effect.

In November 2011, additional site evaluation field work was accomplished: A geophysical magnetometer survey was conducted at several sites, but it was found to be ineffective because of the nature of the soils. During the fieldwork 6 back-hoe trenches, approximately 27 test pits measuring 0.5 m x 0.5 m [1.6 ft x 1.6 ft], and approximately 44 test pits measuring 1.0 m x 1.0 m [3.3 ft x 3.3 ft] were excavated to further evaluate sites near areas where road construction and other impacts would be expected. The testing report for this fieldwork was submitted in 2012.

In preparation for the Class III Inventory, a records search was conducted for the Ross Project area in 2010; this search included the records of the Wyoming Cultural Records Office (WYCRO), the WYCRO online data base, and the BLM's Newcastle Field Office. The records search showed that, prior to the 2010 Class III Inventory, no substantial block inventory had been conducted in the Project area. Small-scale investigations, including two associated with power lines and buried telephone cables as well as a drilling-pad and access-road survey, had been conducted in the Ross Project area. One survey, an inventory for a linear buried telephone cable in Section 13, identified one prehistoric campsite, 48CK1603. This site was re-recorded during the 2011 fieldwork and determined to be eligible for the National Register of Historic Places despite damage from a county road that bisects the site.

Buildings and Structures

No buildings or structures eligible for the National Register of Historic Places (NRHP) or Wyoming State Register were identified within the Ross Project area. An earthen structure in the Ross Project area, the Oshoto Dam, did not meet the criteria for eligibility for listing in the NRHP (48 CFR Part 2157). The original dam has been rebuilt numerous times because of flood damage, most recently in 2005, and is considered to be essentially a reconstruction rather than the original dam.

Archaeological Sites

During the Applicant's initial Class III Inventory for the Ross Project, 24 new sites and 21 isolated finds were recorded. Twenty-three of the recorded sites are prehistoric camps, and one

is a historic-period homestead. A number of sites produced projectile points that represent Middle Archaic, Late Archaic, and Late Prehistoric occupations. Twenty-one isolates were also recorded during the Inventory. All but two of these are prehistoric artifacts; the two historic isolates are trash scatters. In addition to the sites identified during the Class III Inventory, the potential exists for deeply buried sites to be found within the Ross Project area because of its propitious location near the headwaters of the Little Missouri River and the percentage of the Ross Project area that consists of deep alluvium.

As described in the Tribal Consultation section below, a Class III Inventory in the Ross Project area designed to identify and evaluate the NRHP significance of properties of religious and cultural significance to Tribes was performed by representatives of ten Tribes during May and June 2013. During the June Tribal field survey, additional archaeological content including bone and lithic artifacts was found at 48CK2087, a site identified in the cultural resource inventory as consisting only of a hill-top cairn. The new cultural finds at 48CK2087 extend the boundary of 48CK2087. Additionally, three new archaeological sites were found within the Ross Project Area: 48CK2229, 48CK2230, and 48CK2231.

The 27 sites along with previously identified 48CK1603 are listed in Table 1-A, Table 1-B, Table 1-C, and Table 1-D. Consultations on the eligibility determinations for these sites are documented in the following letters between the NRC and the Wyoming State Historic Preservation Office (WYSHPO): NRC letter to WYSHPO, dated March 8, 2013; WYSHPO letter to NRC, dated March 28, 2013; NRC letter to WYSHPO, dated September 20, 2013; WYSHPO letter to NRC, dated October 22, 2013.

Table 1-A. Summary of Ross Project Cultural Properties

Site Number	NRHP Eligibility
48CK1603	Eligible
48CK2070	Unevaluated
48CK2071	Not Eligible
48CK2072	Not Eligible
48CK2073	Unevaluated
48CK2074	Not Eligible
48CK2075	Unevaluated
48CK2076	Unevaluated
48CK2077	Not Eligible
48CK2078	Unevaluated
48CK2079	Unevaluated
48CK2080	Unevaluated
48CK2081	Unevaluated
48CK2082	Unevaluated
48CK2083	Eligible
48CK2084	Not Eligible
48CK2085	Unevaluated
48CK2086	Not Eligible
48CK2087	Unevaluated
48CK2088	Not Eligible
48CK2089	Unevaluated

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Site Number	NRHP Eligibility
48CK2090	Unevaluated
48CK2091	Unevaluated
48CK2092	Unevaluated
48CK2093	Not Eligible
48CK2229	Unevaluated
48CK2230	Unevaluated
48CK2231	Unevaluated

Table 1-B. Summary of NRHP Eligible Ross Project Cultural Properties

Site Number	NRHP Eligibility
48CK1603	Eligible
48CK2083	Eligible

Table 1-C. Summary of NRHP Not Eligible Ross Project Cultural Properties

Site Number	NRHP Eligibility
48CK2071	Not Eligible
48CK2072	Not Eligible
48CK2074	Not Eligible
48CK2077	Not Eligible
48CK2084	Not Eligible
48CK2086	Not Eligible
48CK2088	Not Eligible
48CK2093	Not Eligible

Table 1-D. Summary of Unevaluated Ross Project Cultural Properties

Site Number	NRHP Eligibility
48CK2070	Unevaluated
48CK2073	Unevaluated
48CK2075	Unevaluated
48CK2076	Unevaluated
48CK2078	Unevaluated
48CK2079	Unevaluated
48CK2080	Unevaluated
48CK2081	Unevaluated
48CK2082	Unevaluated
48CK2085	Unevaluated
48CK2087	Unevaluated
48CK2089	Unevaluated
48CK2090	Unevaluated

Site Number	NRHP Eligibility
48CK2091	Unevaluated
48CK2092	Unevaluated
48CK2229	Unevaluated
48CK2230	Unevaluated
48CK2231	Unevaluated

Tribal Consultation

According to Executive Order (EO) No. 13175, *Consultation and Coordination with Indian Tribal Governments*, the NRC is encouraged to "promote government-to-government consultation and coordination with Federally-recognized Tribes that have a known or potential interest in existing licensed uranium-recovery facilities or applications for new facilities." The BLM is required to comply with this Order. Although the NRC, as an independent regulatory agency, is explicitly exempt from the Order, NRC remains committed to its spirit. The agency has demonstrated a commitment to achieving the Order's objectives by implementing a case-by-case approach to interactions with Native American Tribes. The NRC's case-by-case approach allows both the NRC and the Tribes to initiate outreach and communication with one another.

As part of its obligations under Section 106 of the NHPA and the regulations at 36 CFR 800.2(c)(2)(ii)(A), the NRC must provide Native American Tribes "a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties and evaluation of historic properties, including those of religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects." Tribes that have been identified as potentially having concerns about actions near Devils Tower were formally invited by the NRC staff, by letter dated February 9, 2011, to participate in the Section 106 consultation process for the proposed Ross Project (see Table 2). The NRC staff invited the Tribes to participate as consulting parties in the NHPA Section 106 process and sought their assistance in identifying Tribal historic sites and cultural resources that may be affected by the Undertaking.

Table 2. Tribes Invited to Participate in Section 106 Consultation for the Ross Project

1	Apache Tribe of Oklahoma[a]
2	Blackfeet
3	Cheyenne and Arapaho Tribes of Oklahoma
4	Cheyenne River Sioux
5	Chippewa Cree
6	Confederated Salish & Kootenai Tribes
7	Crow Tribe
8	Crow Creek Sioux Tribe
9	Eastern Shoshone Tribe
10	Flandreau Santee Sioux Tribe
11	Fort Belknap Community
12	Fort Peck Assiniboine and Sioux Tribes
13	Kiowa Tribe of Oklahoma[b]
14	Lower Brule Sioux Tribe

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15	Northern Arapaho Tribe
16	Northern Cheyenne Tribe
17	Oglala Sioux Tribe
18	Rosebud Sioux Tribe
19	Santee Sioux Tribe of Nebraska
20	Sisseton-Wahpeton Sioux Tribe
21	Spirit Lake Tribe[b]
22	Standing Rock Sioux Tribe
23	Three Affiliated Tribes
24	Turtle Mountain Band of Chippewa Indians
25	Yankton Sioux Tribe

[a]The Apache Tribe of Oklahoma notified the NRC by email dated August 19, 2011 that it did not wish to participate in consultation on the Ross Project.
[b]No response was received from the Kiowa Tribe of Oklahoma or the Spirit Lake Tribe.

Culturally Significant Locations

No Native American heritage, special interest, or sacred sites were previously formally identified or recorded to date that are in the Ross Project APE. The geographic position of the Project area between mountains considered sacred by various Native American cultures (the Big Horn Mountains to the west and the Black Hills including nearby Devils Tower to the east), however, creates the possibility that the Project area could have sites and locations of special religious or sacred significance to Native American groups.

Properties of Religious and Cultural Significance to Tribes

As required by Section 106 of the NHPA, the NRC requested information about places of cultural, religious, and traditional significance that could be affected by the Ross Project from various interested Tribes in order to complete government-to-government consultation efforts. Places of cultural, religious, and traditional significance that meet the NRHP criteria are included in the definition of Historic Property under 36 CFR Part 800.16(l)(1).

The NRC invited the Tribes listed in Table 2 (excluding The Apache Tribe of Oklahoma) to participate in a field survey of the Ross Project area under an "Open-Site approach" and a "Tribal Working Group" approach. A detailed description of the NRC's efforts to provide an opportunity for Consulting Tribes to conduct a field survey of the Ross Project site is provided in the NRC's letter to the Advisory Council on Historic Preservation (ACHP), dated August 14, 2013. A Class III Inventory in the Ross Project area designed to identify and evaluate the NRHP significance of properties of religious and cultural significance to Tribes was performed by representatives of six Tribes on May 13 – 16, 2013. The six Tribes participating in the May Tribal field survey included:

- Santee Sioux Tribe of Nebraska (Niobrara, Nebraska)
- Crow Creek Sioux Tribe (Fort Thompson, South Dakota)
- Rosebud Sioux Tribe (Rosebud, South Dakota)
- Yankton Sioux Tribe (Wagner, South Dakota)
- Northern Cheyenne Tribe (Lame Deer, Montana)

- Turtle Mountain Band of Chippewa Indians (Belcourt, North Dakota)

A second Tribal field survey was performed by representatives of four Tribes on June 3 – 6, 2013. The four Tribes participating in the May Tribal field survey included:

- Cheyenne and Arapaho Tribes of Oklahoma (Concho, Oklahoma)
- Northern Arapaho Tribe (Fort Washakie, Wyoming)
- Fort Belknap Indian Community (Harlem, Montana)
- Eastern Shoshone Tribe (Fort Washakie, Wyoming)

The entire 696.46 [1,721-ac] Ross Project area was inventoried using current Class III-inventory methods during both Tribal field surveys. Crew members performed the surveys using transects spaced no greater than 30 meters (m) [100 ft]. Skirmish-line transects were walked across the Ross Project area, guided by GPS bearings in addition to natural and cultural features, and the transects were adjusted in direction when major obstacles, such as Oshoto Reservoir, were met. Because of the large numbers of personnel involved in the two surveys, radio communications were provided by Strata to Tribal leaders to facilitate survey communications and coordination. In most instances, a limited time was spent at previously recorded archaeological sites. To facilitate relocation and recording, newly discovered archaeological sites were located by a single GPS datum and briefly noted as to the site's general content and setting. Newly discovered prehistoric individual finds were also mapped and recorded during both surveys.

When properties of religious and cultural significance to Tribes were noted during the May Tribal field survey, the pedestrian survey was brought to a halt, and the find was recorded by the NRC archaeological consultant supporting the survey in consultation with leaders of the May Tribal crew. Properties of religious and cultural significance to Tribes noted during the June Tribal field survey were briefly identified as properties of religious and cultural significance to Tribes by the Tribal crew and plotted by GPS location. The survey then resumed. Once the walkover was completed, the June crew returned to the mapped properties and recorded them.

As a result of the May and June Tribal field surveys, 18 properties of religious and cultural significance to Tribes were located, recorded, and evaluated for NRHP eligibility in the Ross Project area (see Table 3). A *Tribal Field Survey Report* documenting these findings, based on the recommendations provided by the Northern Arapaho Tribe, the Cheyenne and Arapaho Tribes of Oklahoma, and the NRC archaeological consultants that supported the survey will be submitted to the Wyoming SHPO for review and comment. By letter dated August 27, 2012, Strata provided to the NRC the results of its analysis to identify and assess the potential visual effects to properties located within 3 miles of the Ross Project boundary. The NRC in coordination with the BLM will utilize this analysis and additional records search information to analyze indirect effects and will incorporate this analysis into the *Tribal Field Survey Report*.

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Table 3. Summary of Ross Project Properties of Religious and Cultural Significance to Tribes

Site Number	NRHP Eligibility
48CK2070	Unevaluated
48CK2080	Unevaluated
48CK2087	Unevaluated
48CK2089	Unevaluated
48CK2214	Unevaluated
48CK2215	Unevaluated
48CK2216	Unevaluated
48CK2217	Unevaluated
48CK2218	Unevaluated
48CK2219	Unevaluated
48CK2220	Unevaluated
48CK2221	Unevaluated
48CK2222	Unevaluated
48CK2223	Unevaluated
48CK2224	Unevaluated
48CK2225	Unevaluated
48CK2226	Unevaluated
48CK2227	Unevaluated

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(See instructions on the reverse)

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

By a letter dated January 4, 2011, Strata Energy, Inc. (Strata or the "Applicant") submitted a license application to the Nuclear Regulatory Commission (NRC) for a new source and byproduct materials license for the proposed Ross Project. The Ross Project would be located in Crook County, Wyoming, which is in the Nebraska-South Dakota-Wyoming Uranium Milling Region identified in the NUREG-1910, Generic Environmental Impact Statement (GEIS) for In-Situ Leach Uranium Milling Facilities. The NRC staff prepared this Supplemental Environmental Impact Statement (SEIS) to evaluate the potential environmental impacts of the Applicant's proposal to construct, operate, conduct aquifer restoration, and decommission an in situ uranium-recovery facility at the Ross Project. This SEIS describes the environment that could be affected by the proposed Ross Project activities, estimates the potential environmental impacts resulting from the Proposed Action and two Alternatives, discusses the corresponding proposed mitigation measures, and describes the Applicant's environmental-monitoring program. The NRC staff evaluated site-specific data and information to determine whether the site characteristics and the Applicant's proposed activities were consistent with those evaluated in the GEIS. The NRC staff has incorporated public comments received on the Draft SEIS into this Final SEIS.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

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