DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON TX 77553-1229

SEP 16 2010

Policy Analysis Section

SUBJECT: SWG-2007-00768; STP Nuclear Operating Company, Permit Determination

Mr. Scott Head
Manager, Regulatory Affairs
South Texas Project, Units 3 & 4
4000 Avenue F, Suite A
Bay City, Texas 77414

Dear Mr. Head:

By letter dated June 10, 2010, the U.S. Army Corps of Engineers (Corps) requested a stream functional assessment, such as the Unified Stream Methodology, be conducted on the relatively permanent waters to determine if compensatory mitigation is required. Enclosed you will find a copy of the Unified Stream Methodology assessment conducted by the Corps on the relatively permanent waters located at the South Texas Project south of Bay City, along the Colorado River, in Matagorda County, Texas.

The stream functional assessment concluded that the proposed impacts to the 265 linear feet of relatively permanent waters is a moderate to severe impact that may require up to 136 debits of compensatory mitigation. Compensatory mitigation may include on-site permittee responsible mitigation, off-site permittee responsible mitigation, Mill Creek Mitigation Bank or a combination of all three. In order to evaluate a proposed mitigation plan, a plan in accordance with 33 CFR 332.4(c) must be submitted for review.

We are ready to assist you in whatever way possible. We can even arrange a meeting between you and the concerned parties if that is your desire. Please call Jayson Hudson at 409-766-3108 if you need help.

Sincerely,

Casey Cutler
Chief, Policy Analysis Section

Enclosure

Copy Furnished w/encl:

U.S. Nuclear Regulatory Commission, c/o Ms. Jessie Muir M/S T7-E30, 11555 Rockville Pike, Rockville, MD 20852

CESWG-PE-RB(1145) 13 September 2010

COPY

MEMORANDUM FOR THE FILE

SUBJECT: SWG-2007-00768; South Texas Project, Bay City, Matagorda County, Texas

1. A stream assessment, in accordance with the Unified Stream Methodology, was conducted to assist in the determination of the current condition and function of several unnamed relatively permanent waters located at the South Texas Project Nuclear Power Plant located southwest of Bay City, Matagorda County, Texas

2. A desk review was completed on 13 July 2010. The desk review consisted of an examination of the following information:

- 1952 (1972 photo-revised) U.S.G.S Blessing SE topographic quadrangle
- 1943, 1965, 2009 aerial photography

3. A review of the historical aerials and topographic map indicate that no natural stream existed prior to the construction of the nuclear power plant in the late 1970s. The Corps exerted jurisdiction as a water of the United States over the manmade conveyances due to their relatively permanent flow of water. The applicant is proposing to install culverts in 6 waters, 3 of which are new work and three of which are expansions to existing culverts.

4. A site visit was conducted on 14 July 2010. During the site visit, the Unified Stream Methodology was utilized to determine the condition of the waters. The waters were divided into 5 stream assessment reaches (SAR) based on the location of the crossings. The waters were characterized in the field as an intermittent to perennial.

Three SARs, SAR A, B and F are all new work and will result in impacts to 80 linear feet of waters. These SARs were assessed with an impact factor of 1.0, or severe, as a result of the new impacts. SARs A and B were characterized as having: severe channel conditions due to their vertical banks, incised flow located well below rooting depth and riprap banks; high poor buffer due to the mowing and maintenance poor in-stream habitat since none of the habitat types were present; and a severe channel alteration because of the straight, trapezoid channel alignment. SAR F scored similarly, with the exception of having a high marginal riparian buffer score resulting from the lack of mowing and subsequent presence of a scrub/shrub story.

SARs C and D are areas where culverts currently exist, but will need to be enlarged to accommodate the new haul roads. Because of the existing impacts to these waters, an impact factor of 0.5 was assessed. SARs C and D were characterized as: having severe channel conditions due to their vertical banks, incised flow located well below rooting depth and riprap banks; and a severe channel alteration because of the straight, trapezoid channel alignment. SAR C had a mixed score buffer resulting from the presence of maintained area and a road present within the buffer. SAR F had a a high poor buffer due to the mowing and maintenance; poor in-stream habitat since none of the habitat types were present

5. Based on the Unified Stream Methodology, SARs A, B and D scored a Reach Condition Index (RCI) of 0.52 out of a maximum of 1.5; SAR C scored an RCI of 0.51, and SAR F scored an RCI of 0.57. Based on the current proposed project of the construction of culverted crossings,

the Unified Stream Methodology's Impact Factor (IF) score for SARs A, B and F was determined to be a Severe (which is equal to a 1) and SARs C and D were determined to be Moderate (which is equal to 0.5). This IF score, when combined with the RCI and linear feet of impact, results in a need to mitigate for 136 debits.

Jayson M. Hudson
Regulatory Project Manager
Policy Analysis Section

STP Unit 3 & 4 -Culvert Placement and Barge Slip Expansion
Proposed Project Impacts
SWG-2007-786

Block 22

Culvert Impacts

Culvert	Impact Type	JD Width of Stream (ft)[1]	Width of Proposed Culvert (ft)[2]	Existing Culvert Linear (ft)[3]	Total Stream Impact (sq ft)[4]	New Impact Linear (ft)[5]	New Stream Impact (sq ft)[6]	Amount of Dredge/Fill Material (cu yd)[7]
A	New	21	80	0	1,680	80	1,680	62
B	New	6	80	0	480	80	480	17
C	Replace	13	80	75	1,040	5	65	38
D	Replace	20	80	60	1,600	20	400	59
E	Replace	11	80	80	880	0	0	32
F	New	21	80	0	1,680	80	1,680	62
G	None	0	80	0	0	0	0	
					7,360 ~0.17 ac	**265**	**4,305** ~0.10 ac	

[1] Width of Bed and Bank as measured in stream (jurisdictional width) - measured in field
[2] All road beds expected to be 80 ft wide - engineering design
[3] Linear ft of existing culverts (old impacts) - measured in field
[4] Total stream area impacted by culverts (old and new)
[5] Linear ft of new culverts in JD areas (new impacts)
[6] Surface area of new culverts in JD areas (total new impacts)
[7] Cubic yards is based on a 1 ft excavation

Barge Slip Impacts

Existing Length (ft)	Existing Width (ft)	Additional Width (ft)	New Width (ft)	Total Barge Slip Area (sq ft)	Barge Slip New Impacts (sq ft)	Amount of Dredge/Fill Material (cu yd)
500	60	20	80	40,000	10,000	11,851
200	60	20	80	16,000	4,000	8,296
				56,000 ~1.29 ac	**14,000** ~0.32 ac	

Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

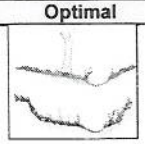
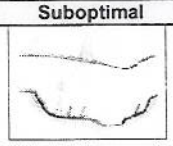
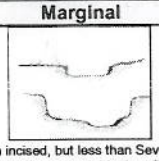
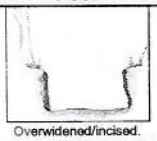
For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
SWG-2007-00768	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	A	80	1

Name(s) of Evaluator(s)	Steam Name and Information
Jayson M Hudson	Unnamed Relatively Permanent Water

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 [illegible], vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.0
NOTES>>	Cobble riprap along entirety of bank. Channel excavated,straightened, and uniform. Flow contained within banks and below surrounding root zone					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor	
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.
		High	Low	High	Low	High	Low
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5

NOTES>>Actively mowed and maintained on both sides. Cobble riprap along much of the buffer.

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%							100%
	Score >	0.6							
Left Bank	% Riparian Area>	100%							100%
	Score >	0.6							

CI= (Sum % RA * Scores*0.01)/2

Rt Bank CI >	0.60	CI
Lt Bank CI >	0.60	0.60

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	CI
Score	1.5	1.2	0.9	0.5	0.50

NOTES>> No shade, woody debris, root mats, riffle/pool complexes present. Some SAV.

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
SWG-2007-00768	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	A	80	1

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>>Channel is engineered drainage ditch with a straight channel with cobble riprap on both sides

	Conditional Category					
	Negligible	Minor		Moderate		Severe
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.
SCORE	1.5	1.3	1.1	0.9	0.7	0.5

0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.52
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	42
CR = RCI X LF X IF	

INSERT PHOTOS:

No pictures available due to camera malfunction.

DESCRIBE PROPOSED IMPACT:

The applicant proposes to place an culvert in 80 linear feet of stream. This resulted in an impact factor of 1.0

Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
SWG-2007-00766	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	B	80	1

Name(s) of Evaluator(s)	Steam Name and Information
Jayson M Hudson	Unnamed Relatively Permanent Water

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

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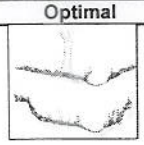
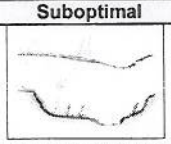
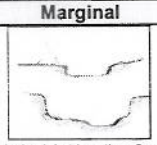
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 Disp[illegible] vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.0
NOTES>>	Channel excavated,straightened, and uniform. Flow contained within banks and below surrounding root zoneVery little flow, water very still.					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor		NOTES>>Actively mowed and maintained on both sides
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
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	Score >	0.6							CI= (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area>	100%						100%	Rt Bank CI > 0.60 → CI
	Score >	0.6							Lt Bank CI > 0.60 → CI 0.60

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	NOTES>>No shade, woody debris, root mats, riffle/pool complexes present. Some SAV.	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.		CI
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Stream Impact Assessment Form Page 2

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SWG-2007-00766	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	B	80	1

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NOTES>>Channel is engineered drainage ditch with a straight channel

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SCORE	1.5	1.3	1.1	0.9	0.7	0.5	0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: **The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.**

THE REACH CONDITION INDEX (RCI) >>	0.52
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	42
CR = RCI X LF X IF	

INSERT PHOTOS:

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Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

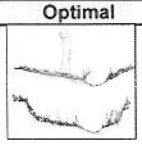
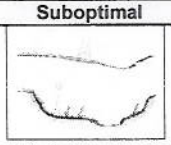
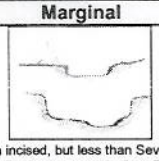
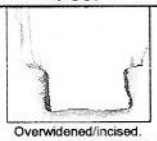
For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
SWG-2007-00799	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	C	5	0.5

Name(s) of Evaluator(s)	Steam Name and Information
Jayson M Hudson	Unnamed Relatively Permanent Water

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 [illegible], vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow	CI
Score	3	2.4	2	1.6	1	1.0

NOTES>> Channel excavated,straightened, and uniform. Flow contained within banks and below surrounding root zone

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor	
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.
		High	Low	High	Low	High	Low
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5

NOTES>> Site has existing culverted crossing for road that runs parallel to the channel. Upstream the road is on the north side of the channel, downstream it is located on the south side of the channel. The remainder of the buffer is mowed and maintained

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	50%	50%					100%
	Score >	0.6	0.5					
Left Bank	% Riparian Area>	50%	50%					100%
	Score >	0.6	0.5					

CI= (Sum % RA * Scores*0.01)/2

Rt Bank CI >	0.55	CI
Lt Bank CI >	0.55	0.55

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	CI
Score	1.5	1.2	0.9	0.5	0.50

NOTES>>No shade, woody debris, root mats, riffle/pool complexes present. Some SAV.

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
SWG-2007-00799	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	C	5	0.5

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

	Conditional Category						NOTES>>Channel is engineered drainage ditch with a straight channel with cobble riprap on both sides	
	Negligible	Minor		Moderate		Severe		
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.		
SCORE	1.5	1.3	1.1	0.9	0.7	0.5		0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.51
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	1
CR = RCI X LF X IF	

INSERT PHOTOS:

No pictures avaliable due to camera malfunction

DESCRIBE PROPOSED IMPACT:

The applicant proposes to remove the existing 75-foot culvert anreplace it with an 80-foot culvert, resulting in an additional 5 feet of culvert. This resulting in an impact factor score of 0.5 due to its moderate affect on the channel.

Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

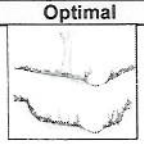
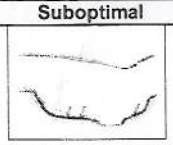
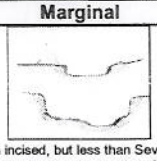
For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
SWG-2007-00799	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	D	20	0.5

Name(s) of Evaluator(s)	Steam Name and Information
Jayson M Hudson	Unnamed Relatively Permanent Water

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.0
NOTES>>	Channel excavated,straightened, and uniform. Flow contained within banks and below surrounding root zone					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor		NOTES>>Actively mowed and maintained on both sides.
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%							100%	
	Score >	0.6								
										CI= (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area>	100%							100%	Rt Bank CI > 0.60 / Lt Bank CI > 0.60
	Score >	0.6								CI: 0.60

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	NOTES>>No shade, woody debris, root mats, riffle/pool complexes present. Some SAV.
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	
Score	1.5	1.2	0.9	0.5	CI: 0.50

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
SWG-2007-00799	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	D	20	0.5

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>>Channel is engineered drainage ditch with a straight channel with cobble riprap on both sides

	Conditional Category						
	Negligible	Minor		Moderate		Severe	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.	
SCORE	1.5	1.3	1.1	0.9	0.7	0.5	0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: **The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.**

THE REACH CONDITION INDEX (RCI) >>	0.52

RCI= (Sum of all CI's)/5

COMPENSATION REQUIREMENT (CR) >>	5

CR = RCI X LF X IF

INSERT PHOTOS:

No pictures available due to camera malfunction.

DESCRIBE PROPOSED IMPACT:

The applicant proposes to remove the existing 60-foot culvert anreplace it with an 80-foot culvert, resulting in an additional 5 feet of culvert. This resulting in an impact factor score of 0.5 due to its moderate affect on the channel.

Stream Assessment Form (Form 1)

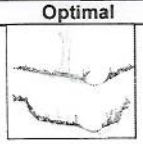
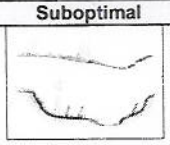
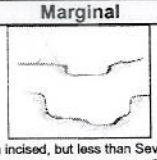
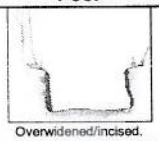
Unified Stream Methodology for use in Virginia

For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
WG-2007-007	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	F	80	1

Name(s) of Evaluator(s)	Steam Name and Information
Jayson M Hudson	Unnamed Relatively Permanent Water

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

	Conditional Category					
	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.0
NOTES>>	Channel excavated,straightened, and uniform. Flow contained within banks and below surrounding root zone					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

	Conditional Category							NOTES>> Buffer is non-maintained scrub/shrub with dense herbaceous layer
	Optimal	Suboptimal		Marginal		Poor		
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%							100%
	Score >	0.85							
Left Bank	% Riparian Area>	100%							100%
	Score >	0.85							

CI= (Sum % RA * Scores*0.01)/2

Rt Bank CI >	0.85	CI
Lt Bank CI >	0.85	0.85

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

	Conditional Category				NOTES>>No shade, woody debris, root mats, riffle/pool complexes present. Some SAV.
	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	CI
Score	1.5	1.2	0.9	0.5	0.50

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
WG-2007-007	South Texas Project Units 3&4	STP	Riverine	12	14 July 10	F	80	1

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>>Channel is engineered drainage ditch with a straight channel with cobble riprap on both sides

	Conditional Category						
	Negligible	Minor		Moderate		Severe	
Channel Alteration	Channelization, dredging, alteration, or hardening absent Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.	
SCORE	1.5	1.3	1.1	0.9	0.7	0.5	0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.57
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	46
CR = RCI X LF X IF	

INSERT PHOTOS:

No pictures available due to camera malfunction

DESCRIBE PROPOSED IMPACT:

The applicant proposes to place an cuvert in 80 linear feet of stream. This resulted in an impact factor of 1.0

COPY

Blessing SE 1952
Photorevised 1972

January 2009

1943

1965